



THE DITRANSITIVE ALTERNATION IN PRESENT-DAY GERMAN

A corpus-based analysis

Hilde De Vaere

Proefschrift voorgelegd tot het behalen van
de graad van Doctor in de taalkunde



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Do not invent anything; simply discover it.

Richard Powers. 2014. *Orfeo*. New York: W.W. Norton & Company. P.309.

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Abstract

The study is a corpus-based analysis of the ditransitive alternation in present-day German with 17 noncomplex and complex verbs, viz. *geben*, *schicken*, *senden*; *abgeben*, *preisgeben*, *übergeben*, *vergeben*, *weitergeben*, *zurückgeben*; *einschicken*, *einsenden*, *übersenden*, *zurückschicken*, *zurücksenden*; *ausleihen*, *verleihen* and *verkaufen*. The alternating constructions are the Indirect Object Construction (IOC) and the Prepositional Object Construction (POC). Both alternants contain a trivalent transfer verb in combination with three arguments: an AGENT in the nominative, a THEME in the accusative and a RECIPIENT-like argument. The RECIPIENT-like argument can either be realised as a dative Noun Phrase or as a Prepositional Phrase introduced by *an* + accusative (or, alternatively, *zu* + dative with the verbs *schicken* and *senden* and their complex counterparts), resulting in IOC or POC, respectively. Statistical analyses of 7400 sentences retrieved from the IDS Mannheim's DeReKo corpus and taken from German, Swiss, Austrian and Wikipedia sources show that the alternation is associated with multiple factors that are assumed to operate simultaneously. A major conclusion of the investigation is that predictors pertaining to the principle of Harmonic Alignment of the arguments (according to which animate, pronominal, definite, given, short arguments precede inanimate, nominal, indefinite, new and long arguments) play a role in the alternation, but that other predictors are involved as well and, hence, Harmonic Alignment only partly accounts for the German data. Apart from factors such as Case Syncretism and Propernounhood of the RECIPIENT argument, which relate to a tendency towards greater transparency associated with POC, properties specifically pertaining to the verb, the three denotational classes (viz. concrete, abstract, propositional) and various senses turn out to be important factors in view of a comprehensive account of the alternation. The alternation moreover proves to be strongly verb-dependent. The two alternating constructions IOC and POC are thus shown to relate to the semantics/pragmatics interface, which requires a careful analysis of the encoded and inferred meanings that ground the alternation.

Apart from the Probabilistic Approach utilised to analyse the data, the theoretical framework in which the study is embedded is an Integrative Approach which takes into account both constructionist and projectionist assumptions in the analysis of morphosyntax and alternating constructions. With regard to the issues of meaning and sense, the analysis is couched in a Three-Layer Approach to meaning, in which a

difference is made between encoded linguistic content (semantics proper) and inferred linguistic content (the domain of pragmatics). Importantly, the pragmatic level is further differentiated to account for the partly highly conventionalised variation in form and meaning at the intermediate level of 'normal language use', in line with the theories of meaning developed by E. Coseriu and S. Levinson. IOC and POC are thus not considered two encoded constructions in their own right in German grammar, but rather as two pragmatically defined 'allostructions' of an overarching general 'constructeme', which is termed the AGENT-THEME-GOAL construction. Both the verbs and the AGENT-THEME-GOAL construction contribute to the alternation with their general, underspecified meanings but they are varyingly enriched by encyclopaedic knowledge and a range of factors that pertain to pragmatics. IOC or POC can thus be shown to be associated with a large set of statistically significant factors that interact with each other and with the AGENT-THEME-GOAL construction, i.e., the 'constructeme' that underpins both IOC and POC.

Samenvatting

De studie is een corpusgebaseerde analyse van de ditransitieve alternantie in hedendaags Duits met een selectie van 17 non-complexe en complexe werkwoorden, meer bepaald: *geben, schicken, senden; abgeben, preisgeben, übergeben, vergeben, weitergeben, zurückgeben; einschicken, einsenden, übersenden, zurückschicken, zurücksenden; ausleihen, verleihen* en *verkaufen*. De alternantie doet zich voor tussen de zgn. ‘Indirect Object Constructie’ (IOC) en de ‘Prepositioneel Object Constructie’ (POC). Beide alternanten bevatten een trivalent werkwoord dat een transfer uitdrukt in combinatie met drie argumenten: een AGENS in de nominatief, een THEMA in de accusatief en een RECIPIENS-achtig (“ONTVANGER”) argument. Het laatstgenoemde argument kan ofwel in de datief gerealiseerd worden, of door middel van een voorzetselconstituent ingeleid door *an* + accusatief (of ook *zu* + datief met de werkwoorden *schicken* en *senden* en hun complexe tegenhangers), wat respectievelijk resulteert in IOC of POC. Statistische analyses van 7400 zinnen uit DeReKo (IDS Mannheim), opgevraagd uit Duitse, Zwitserse en Oostenrijkse bronnen en uit Wikipedia, tonen aan dat de alternantie geassocieerd kan worden met een samenspel van meerdere factoren die gelijktijdig de alternantie beïnvloeden. Een belangrijke conclusie van het onderzoek is dat predictoren met betrekking tot het principe van “Harmonic Alignment” van de argumenten (volgens welke animate, pronominale, definiete, gegeven, korte argumenten voorafgaan aan inanimate, nominale, indefiniete, nieuwe en lange argumenten) met zekerheid een rol spelen in de alternantie, maar de analyse brengt ook aan het licht dat andere predictoren eveneens van belang zijn en dat “Harmonic Alignment” de Duitse data slechts gedeeltelijk kan verklaren. Afgezien van factoren zoals Casussyncretisme en Proprialiteit (d.i. eigennaam vs. soortnaam) van de ONTVANGER-rol, die te maken hebben met een tendens tot grotere transparantie in POC, zijn er eigenschappen, meer specifiek met betrekking tot het werkwoord, de drie denotationele klassen (concreet, abstract, propositioneel) en diverse gebruiksbetekeningen (Eng. “senses”), die belangrijk zijn voor een omvattende verklaring van de alternantie tussen IOC en POC. De alternantie blijkt bovendien in sterke mate werkwoordspecifiek te zijn. De studie toont op die manier aan dat de twee alternanten gesitueerd moeten worden op het raakvlak van semantiek en pragmatiek, wat een nauwkeurige analyse van de gecodeerde en geïnferreerde betekenissen vereist waarop de alternantie gebaseerd is.

Naast de Probabilistische Aanpak die gebruikt wordt voor de analyse van de data, is het theoretisch kader van de studie een Integrale Aanpak, die in de analyse van morfosyntaxis en alternerende constructies zowel met constructionele als met projectionistische principes rekening houdt. Met het oog op betekenis (Engels “meaning” en “senses”) wordt een analyse volgens drie betekenisniveaus voorgesteld, waarin een verschil gemaakt wordt tussen gecodeerde inhouden (de semantiek stricto sensu) en geïnfereerde inhouden (het domein van de pragmatiek). Belangrijk is dat het pragmatische niveau verder gedifferentieerd wordt om de deels sterk geconventionaliseerde variatie in vorm en betekenis op het intermediaire niveau van ‘normaal taalgebruik’ te verklaren, in overeenstemming met de betekenisstheorieën ontwikkeld door E. Coseriu en S. Levinson. IOC en POC worden niet beschouwd als twee op zich gecodeerde constructies in de Duitse grammatica, maar als twee pragmatisch gedefinieerde ‘allostructies’ van een overkoepelend algemeen ‘constructeem’, dat de AGENS-THEMA-DOEL-constructie genoemd wordt. Zowel de werkwoorden als het ‘constructeem’ dragen bij tot de alternantie met hun algemene, ondergespecificeerde betekenissen, maar ze worden op verschillende manieren verrijkt met encyclopedische kennis en een reeks factoren die tot de pragmatiek behoren. Op die manier wordt er aangetoond dat IOC en POC in verband gebracht kunnen worden met een groot aantal statistisch significante factoren die interageren met elkaar en met de AGENS-THEMA-DOEL-constructie, het ‘constructeem’ dat aan de grondslag van IOC en POC ligt.

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During my studies of Scandinavian languages and literature, I took an optional course called *Capita Selecta* in General Linguistics. Prof. Dr. Klaas Willems was the lecturer in charge. In the final class, he cautiously approached the select group of nine students with a view to pursuing a doctorate in General Linguistics. All the young students ducked. I didn't. Although I still had a year to go to complete my master's, we arranged to discuss the matter in his office; he took down my info. Little did I know at that time that I was born in the same year as his wife, or that his wife and I had been in the same class at university forty years ago.

Ever since that last *Capita Selecta* lesson, I have been grateful I raised my hand and declared that a PhD was something I wanted to achieve. I could not have chosen a better supervisor. From my first visit to the Jubileumlaan on 30 April 2015, Klaas Willems created an inspiring environment for me with all the equipment I could possibly dream of: an office with a view, a spacious desk, a computer with two screens (!), a whiteboard, and every reference book my studies left me desperate to delve into. He also provided me with a subject that aroused my enthusiasm as a former teacher of German: German alternating syntax. Even more important, however, is his contribution to this PhD project as a scientist and as a person: not only does he have an astounding knowledge of linguistics, he is also extremely devoted to his students. At any time, he is at their disposal and willing to discuss any topic related to their work. Moreover, he is a good team player and succeeds in guiding his research team towards a well-considered solution to any problem. I honestly do not think I would have been able to realise this project without his highly appreciated help.

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hood. That my first presentation ever as a PhD student was at his university is no coincidence.

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My three children, my in-laws and the three grandsons now all know the dative (“der, die, das? Dem!”, “moemie moet naar de professor vandaag”) and can reason about alternating ways to express oneself. They prove that even non-linguists can have interesting opinions on the ditransitive alternation.

Last but not least, I would like to thank my parents, to whom this dissertation is dedicated, for educating me and teaching me to always listen to the music of language.

List of Abbreviations

A

A = Agent-like argument

abgb, abg = *abgeben*

abstrc = abstract

acc = accessible

ACC, AKK = accusative

Ag = agent, agents

AgentAnim = Animacy of AGENT

anim = animate

ASC = Argument Structure Construction

AT = Austria

C

CH = Switzerland

CI = Confidence Interval

CM = Caused Motion

CMC = Caused Motion Construction

coll = collective

concr = concrete

CP = Caused Possession

CxG = Construction Grammar

D

D = Germany

DAT = dative

DenoClass = Denotational Class of the Verb

DIOC = Dative Indirect Object Construction

ditr = ditransitive

DO = Direct Object

DOC = Double Object Construction

E

ensc = *einschicken*

ensn = *einsenden*

F

Fr. = French

G

G = GOAL-like argument

G. = German

I

Idiom = Idiomaticity of THEME + verb

indv = individual

INF = infinitive

innm = inanimate

IO = Indirect Object

IOC = Indirect Object Construction

IPFV = imperfective

K

K_{dat} = Dativkomplement

K_{prp} = Präpositivkomplement

L

LengthDiff = Length Difference

Lit. = literally

N

ninf = non inferable

NOM = nominative

O

O = Object

P

P, Pat = patient, patients

PA = Probabilistic Approach

PIOC = Prepositional Indirect Object Construction

PL = plural

PO = Prepositional Object

POC = Prepositional Object Construction

PP = Prepositional Phrase

prpstn = propositional

PRS = present

prsg = *preisgeben*

PTCP = participle

R

R, Rez = recipient

R = RECIPIENT-like argument

RecAnim = Animacy of RECIPIENT

RecConc = Concreteness of RECIPIENT

RecDef = Definiteness of RECIPIENT

RecGiv = Givenness of RECIPIENT

RecNum = Number of RECIPIENT

RecPerson = Grammatical Person of RECIPIENT

RecPron = Pronominality of RECIPIENT

RecProperNoun = Propernounhood of RECIPIENT

RecSync = Syncretism of RECIPIENT

S

S, SU = Subject

SBJV = subjunctive

sc = *schicken*

SG = singular

sn = *senden*

sscomplex = *-schicken/senden* complex

T

T = THEME-like argument

ThemeAnim = Animacy of THEME

ThemeConc = Concreteness of THEME

ThemeDef = Definiteness of THEME

ThemeGiv = Givenness of THEME

ThemeLogDice = Collocation Strength of THEME and verb

ThemePron = Pronominality of THEME

tr = transitive

U

übrg, übg = *übergeben*

übrs = *übersenden*

UID = unique identity

undr = underspecified

V

V = Verb

VT = Valency Theory

W

W = Wikipedia

wtr= *weeterschicken*

wtrg = *weitergeben*

Z

zrck, zrckg = *zurückgeben*

zrcksc = *zurückschicken*

zrcksn = *zurücksenden*

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Introduction

The subject of this study is the morphosyntactic alternation in present-day German as illustrated in the following (a) and (b) sentences:

- (1) (a) *Dekan Hartmut Böhm gab <den Pilgern> [seinen Segen]*
 Dean H. Böhm.NOM give.IPF.3SG the.DAT pilgrims his.ACC blessing
für den ersten Wegabschnitt.
 for the first trail section

‘Dean Hartmut Böhm gave the pilgrims his blessing for the first trail section.’

- (b) *Dünnebier hat [seine Vorschläge] bereits*
 Dünnebier.NOM have.PRS.3SG his.ACC suggestions already
<an das Planungsbüro> gegeben.
 to the.ACC planning office give.PTCP

‘Dünnebier has already submitted his suggestions to the planning office.’

- (2) (a) *Ich schickte <ihm> [Bilder und meine Geschichte],*
 I.NOM send.IPFV.1SG he.DAT pictures and my story.ACC
jetzt darf ich plötzlich nach Amerika.
 now I am suddenly allowed to America

‘I sent him pictures and my story; now I am suddenly allowed to go to America.’

- (b) *Die Hobby-Köche hatten [diese Rezept-Ideen]*
 the.NOM hobby cooks have.IPFV.3PL these.ACC recipe ideas
<an unsere Redaktion> geschickt.
 to our.ACC editors send.PTCP

‘The hobby cooks had sent these recipe ideas to our editors.’

- (3) (a) *Kanada will <den Vereinigten Staaten> [Erdgas] verkaufen.*
 Canada.NOM want.PRS.3SG the.DAT United States natural gas.ACC sell.INF

‘Canada wants to sell natural gas to the United States.’

(b) *Motorola* *will* [*eine Lizenz für ihre Technologie*]
 Motorola.NOM want.PRS.3SG a.DAT licence for their technology
<an Texas Instruments> *verkaufen.*
 to.ACC Texas Instruments sell.INF

‘Motorola wants to sell a licence for their technology to Texas Instruments.’

(4) (a) *Herr Hamburger,* *Sie* *haben* *<dem Bundespräsidenten>*
 Mr. Hamburger.NOM you.NOM have.PRS.3PL the.DAT Federal President
[Ihre Verdienstkreuze] *zurückgesandt.*
 your.ACC Crosses of Merit return.PTCP

‘Mr. Hamburger, you have returned your Crosses of Merit to the Federal President.’

(b) [*Sein Parteibuch*] *sandte* *er* *erst einige Tage später*
 his.ACC.party book send.IPFV.3SG he.NOM only a few days later
<an die SPD im Saarland> *zurück.*
 to the.ACC SPD in the Saarland back

‘Just a few days later, he sent his party membership card back to the SPD in Saarland.’

(5) (a) *1966* *übergaben* *ihre Erben* [*die Sammlung*]
 in 1966 hand over.IPFV.3PL her.NOM heirs the.ACC collection
<der Nationalgalerie>.
 the.DAT national gallery

‘In 1966 her heirs handed over the collection to the national gallery.’

(b) *Aber ich* *übergebe* *<an meinen Nachfolger>* [*eine intakte Mannschaft*],
 But I.NOM hand over.PRS.1SG to my.ACC successor an.ACC intact team
so Knapp.
 thus Knapp

‘But I hand over an intact team to my successor, Knapp is saying.’

(6) (a) *Auch das* *verleiht* *<dem Fest>* [*ein besonderes Flair*].
 also that.NOM give.PRS.3SG the.DAT party a.ACC special flair

‘That too gives the party a special flair.’

(b) [*Die Jubiläumsmedaille der Stadt*] *verlieh* *OB Eva Lohse.*
 the.ACC commemorative medal of the city award.IPFV.3SG mayor Eva Lohse.NOM
<an Rainer Klein>
 to.ACC Rainer Klein

‘Mayor Eva Lohse awarded the commemorative medal of the city to Rainer Klein.’

The two alternants exemplified in (a) and (b) occur with a number of verbs and include an AGENT-like, a THEME-like and a RECIPIENT-like argument. For the sake of convenience, I will refer to these three arguments simply as AGENT, THEME and RECIPIENT (I will return to the qualification “-like” later, cf. Section 2.1). Throughout this dissertation, the THEME is between square brackets and the RECIPIENT is between single angle brackets in the example sentences. It is important to note that the RECIPIENT is coded differently in the two alternants. In the (a) sentences, the RECIPIENT argument is in the dative case. By contrast, in the (b) sentences, it is coded as a Prepositional Phrase (PP).¹

I refer to the two alternants with the terms Indirect Object Construction (IOC) and Prepositional Object Construction (POC), respectively. Given that the two morphosyntactic patterns are considered alternants, the designations “Dative Indirect Object Construction” (DIOC) and “Prepositional Indirect Object Construction” (PIOC) would be more complete. However, in order not to create any confusion, in particular with regard to the abbreviation DOC (“Double Object Construction”) which is well-known from the literature on the so-called ‘dative alternation’ in English and other languages (see Section 2.1 for discussion), I will use the abbreviations IOC and POC.²

While the RECIPIENT is invariably coded in the dative case in IOC, there may be variation with regard to its coding in POC. With verbs such as *schicken* and *senden* ‘send’, POC contains a PP in which the preposition is either a two-way preposition governing the accusative, viz. *an* + accusative, *auf* + accusative, *in* + accusative, or a one-way preposition governing the dative, viz. *zu* + dative and *nach* + dative.³ However, as a rule, PPs with *auf*, *in* and *nach* designate a DESTINATION rather than a RECIPIENT, and with these prepositions POC does not alternate with IOC in the expression of transfer. For this reason, I will not take any further PPs with *auf*, *in* or *nach* into consideration in this study. By contrast, as (7) and (8) show, PPs with *an* and *zu* can both be used to designate a RECIPIENT, and they therefore fall within the scope of this study.

- (7) *Bürgermeister Rudolf Hakel* hatte <*an jeden Haushalt*>
 Mayor Rudolf Hakel.NOM have.IPF.3SG to each.ACC household
 [*einen Brief mit aufgedrucktem Stadtdwappen*] geschickt.
 a.ACC letter with printed coat of arms send.PTCP

‘Mayor R. Hakel had sent a letter with a coat of arms printed on it to each household.’

¹ Unless indicated otherwise, all examples in this study are drawn from DeReKo (Deutsches Referenzkorpus, Mannheim) which is freely available at <http://www.ids-mannheim.de/cosmas2/>. See Chapter 4 for more information on the corpus and the sampling method.

² Whether the alternants actually are two Argument Structure Constructions in their own right, or are better construed as two variants of one and the same ASC, will be a subject of inquiry; cf. Section 2.5 and Chapter 5.

³ Other prepositions such as *vor* and *gegenüber* (both governing the dative) may occur with *verba dicendi* (e.g., *Experten erklärten vor der Presse/gegenüber Journalisten, dass der Atomreaktor völlig sicher konstruiert sei* ‘Experts declared to the press/in front of journalists, that the construction of the nuclear reactor is entirely safe’, (example from E-VALBU) but in this study I will not discuss *verba dicendi*.

- (8) *Stattdessen sende ich [es] dann <zu meiner Psychiaterin>.*
 instead send.PRS.1SG I.NOM it.ACC then to my.DAT psychiatrist
 ‘Instead, I will then send it to my psychiatrist.’ (it = a picture)

Conversely, with many other verbs, including *geben*, *preisgeben*, *übergeben*, *verkaufen*, *ausleihen* etc., the IOC/POC alternation is restricted to IOC and *an* + accusative, as in (9) and (10), given that these verbs do not combine with *zu* to express transfer.

- (9) *Striffler hat [sein Werk] <an das Archiv des Deutschen*
 Striffler.NOM have.PRES.3SG his.ACC work to the.ACC archive of the “Deutsches
Architekturmuseums in Frankfurt> gegeben.
 Architekturmuseum” in Frankfurt give.PTCP

‘Striffler has given his work to the archive of the “Deutsches Architekturmuseum” in Frankfurt.’

- (10) *[Welche Empfehlungen] gibt der VGT <an den Gesetzgeber>?*
 which recommendations.ACC give.PRS.3SG the. NOM VGT to the.ACC legislator
 ‘Which recommendations does the VGT (Verkehrsgerichtstag) give to the legislator?’

In present-day German, the IOC/POC alternation is well attested to by a large number of trivalent verbs. According to Duden (2016: 402), there are five subclasses of trivalent verbs in German: “Verben des Gebens und Zeigens” ‘verbs of giving and showing’, “Verben des Nehmens” ‘verbs of taking’, “Verben des Mitteilens und Versprechens” ‘verbs of communication and promise’, “Verben des Verheimlichens” ‘verbs of concealment’ and a group with verbs that “do not fit into the pattern of transaction verbs”. All these trivalent verbs express some sort of ‘transfer’ of a THEME (Zifonun et al. (1997: 1320-1322)). Duden (2006: 400) uses the term ‘transaction’ instead of ‘transfer’, but I will stick to the latter term in this study to designate, in a general way, the conveyance of something as part of a three-place pattern.

The verbs that I will investigate in this study have been selected according to the following criteria:

- They are trivalent verbs; this excludes verbs that may occur in a three-place Argument Structure Construction without themselves possessing the required valency; compare, e.g., *Er baut mir ein Haus. Er baut ein Haus für mich* ‘He is building me a house. He is building a house for me’.
- The verbs cover two of the three subclasses that alternate according to the Ditransitivity Hierarchy put forward by Croft et al. (2001) (cf. Section 2.4), and thus either belong to Levin’s (1993) GIVE VERBS (e.g., *geben* ‘give’ and its complex counterparts, but also *ausleihen* ‘lend’ and *verkaufen* ‘sell’) or SEND VERBS (e.g., *schicken* and *senden* ‘send’ and their complex counterparts). Unlike in English, the

subclass of THROW VERBS (e.g., *werfen* ‘throw’: throw somebody something/throw something to somebody) does not alternate in German.

- The verbs occur with sufficient frequency in IOC and POC to make a quantitative analysis of the alternation possible. For example, *leihen* ‘lend’ only rarely alternates (419 IOC vs. 5 POC based on a frequency count in DeReKo) and is therefore not included in the study.

Based on these criteria, the investigation includes the following verbs:

- *geben* ‘give’, and some of its complex counterparts, including *abgeben* ‘hand in, submit’, *preisgeben* ‘disclose, reveal’, *übergeben* ‘deliver, hand over’, *weitergeben* ‘pass, pass on’, *zurückgeben* ‘return, give back’, *ausleihen* ‘lend, borrow’, *verleihen* ‘give, confer, lend, award’, and *verkaufen* ‘sell’,
- *schicken* ‘send’, *senden* ‘send’ and some of their complex counterparts, including *einschicken* ‘send in’, *einsenden* ‘send in’, *übersenden* ‘send, forward’, *weeterschicken* ‘forward, send on’, *zurückschicken* ‘return, send back’, *zurücksenden* ‘return’.

The verbs that express ‘give’ are generally considered to be the most frequent and prototypical trivalent verbs from a cross-linguistic perspective (cf. Haspelmath 2013: Chapter 105). As a consequence, they are also regarded as the most prototypical verbs to occur in the Ditransitive Construction in languages across the globe, and the meaning of ‘give’ is in fact sometimes even identified with the Ditransitive Construction (cf. Goldberg 1995: 40). RECIPIENTS of verbs of giving are known to show a large crosslinguistic and language-internal coding variation (Primus 2011: 318). In English, there are three possible patterns:

- [1] The pattern [Recipient \neq Agent, Patient] in the *to*-construction, e.g., *Mary gave the apple to the child*, which is called the Indirect Object Construction because of its indirective alignment (see Section 2.1).
- [2] The pattern [Recipient = Patient] in the Double Object Construction (DOC), which is neutrally aligned, e.g., *Mary gave the child the apple*.
- [3] The pattern [Recipient = Patient_{tr} \neq Patient_{ditr}] or the Primary Object Pattern, e.g., *Mary supplied the child with apples*.

German also has these three patterns with verbs of giving. The first pattern – with indirective alignment – can either be realised with a RECIPIENT in the dative (e.g., *Maria gab <dem Kind> [einen Apfel]* ‘Mary gave the child an apple’) or the RECIPIENT can be introduced by a preposition (e.g., *Er gab [eine Spende] <an das Rote Kreuz>* ‘he gave a donation to the Red Cross’), as illustrated in (1) through (10) above. As previously explained, I refer to the (a) realisations as IOC and to the (b) realisations as POC. The second pattern is rare, found with only a handful of verbs, and occurs when both THEME and RECIPIENT are expressed in the accusative, e.g., *Er lehrte <die Kinder> [Spanisch]* ‘He taught the children Spanish’. Finally, the Primary Object Pattern also exists in German:

the RECIPIENT is in the same case as the PATIENT in monotransitive sentences, viz. accusative, while the THEME is expressed differently (*mit* + dative) (Primus 2011: 318), as in (11). However, the Primary Object Pattern is not the subject of this study.

- (11) *Der Nikolaus* *beschenkte* *<die Kinder>* [*mit Süßigkeiten*].
 Saint Nicholas.NOM bestow.IPFV.3SG the.ACC children with.DAT candy
 ‘Saint Nicholas bestowed candy upon the children.’

In Goldberg’s Construction Grammar Approach, the so-called ‘dative alternation’ in English is analysed in terms of two Argument Structure Constructions (ASCs). The Double Object Construction (DOC) ‘X CAUSES Y to RECEIVE Z’ (e.g., *John gave Mary an apple*) is contrasted with the Transfer Caused Motion Construction (e.g., *John gave an apple to Mary*), which is considered a metaphorical extension of the Caused Motion Construction ‘X CAUSES Y to MOVE Z’ (e.g., *Joe kicked the bottle into the yard*) (Goldberg 1995, 2006). Only DOC is considered a ditransitive ASC by Goldberg (1995: 3, 89). However, I will not adopt this terminology but instead apply the term ‘ditransitive’ more broadly, in line with typological studies (cf. Malchukov et al. 2007; Willems 2020); see also Section 2.1 for discussion. Both constructions are assumed to be associated with typical or unmarked word orders in English: DOC nearly always occurs with RECIPIENT-THEME order, whereas the Caused Motion Construction normally occurs with THEME-RECIPIENT order. As we will see in Section 2.6, in German, a case language, constituent order can vary within both IOC and POC.

The alternation has been studied from various perspectives and frameworks (see Section 1.2) and in many languages besides English, including Dutch (Coleman 2006; Geleyn 2016), Danish (Kizach and Winther Balling 2013), Croatian (Velnić 2017), and Chinese (Du 2009). To the best of my knowledge, however, a corpus-based study of the alternation in German has not yet been carried out. With this study, I hope to fill this gap.

As the overview of previous research (cf. Section 1.2) will show, various approaches to alternating structures are possible. There is some disagreement on the extent of the alternation in German, but what interests me most, is how existing theoretical frameworks account for alternating structures in general, and to what extent these accounts capture the various facets of the alternation observed in the present-day German data.

While a number of researchers, mainly following the English tradition (e.g., CxG, Section 1.2.3), assume that the IOC/POC alternation concerns two different Argument Structure Constructions, other scholars situate the difference between the two alternants mainly with respect to the semantics of the verb (e.g., the Verb Sensitive Approaches, cf. Section 1.2.4) or attribute changes in morphosyntax to differences in verb valency (e.g., Welke 1989). Still others primarily focus either on the dative (e.g., Wegener 1985) or on

the Prepositional Phrase (e.g., Höllein 2019), without establishing the IOC/POC alternation as their main object of investigation.

In the present study, I do not intend to develop a novel method for the analysis of the IOC/POC alternation. It is my aim to draw on existing concepts and methods developed by previous authors and integrate the many existing insights into this study, in so far as these insights contribute to couching the German IOC/POC alternation in a coherent theoretical and methodological framework. The study will pay attention to Valency Theory (VT) and Construction Grammar (CxG), among other theoretical concepts and approaches. I will apply the quantitative methods of the Probabilistic Approach to alternating constructions (e.g., Bresnan and Ford 2010; Theijssen 2012; Röthlisberger et al. 2017) and conduct a corpus study to establish the extent to which certain claims in the literature about alternation, including those primarily based on introspection, are borne out by the data. The Probabilistic Approach allows the likelihood of the two structures (IOC and POC) to be predicted by examining the different factors that may influence the alternation by means of statistical analyses. The challenge will not only be to determine how to interpret the statistical results obtained, but also to decide how to integrate them into the theoretical framework I intend to use. One of the goals of this study is to reconcile the concrete predictions of the statistical analyses with an approach that strives for a combination of VT and CxG, in which the verb, with its valency, is considered to be in interaction with the form and meaning of the Argument Structure Construction in which it is inserted. In most construction-based accounts, constructions are envisaged in a network of more or less schematic patterns that are interconnected by vertical and horizontal links. Therefore, more formally schematic constructions usually also have more schematic meanings. The ambition of this study is not only to uncover the contribution of (the meaning of) the verb to these patterns, but also to define the semantic contribution of the construction itself and, in so doing, to determine the status of the alternants.

In order to present these relations, I appeal to two approaches that adopt three levels of analysis in their account of natural language phenomena: Coseriu's approach of language and meaning which distinguishes between linguistic properties that pertain to the language system, 'normal language use' and concrete discourse (Coseriu 1975 [1962], 1979, 1987, 1992 [1988]), and Levinson's pragmatic three-levelled approach to meaning and inferencing (Levinson 1995, 1997, 2000). Because I surmise that the German ditransitive alternation may at least to some extent be a language-specific phenomenon, I intend to approach it with a keen interest in describing it as much as possible in its own terms. This entails that it will be necessary to accurately determine the properties and status of IOC and POC in German and to ask the question whether the statistical results that aim to predict the two structures point to two different, independent structures, each with their own form and meaning, or whether an analysis in terms of one overarching, more schematic, general structure with two variants or 'allostructions'

(Cappelle 2006; Perek 2015) better accounts for the data. In that respect it is important to note from the outset that the Three-Layer Approach to meaning I will adopt takes into account the distinction between semantics and pragmatics, between code and inference (cf. also Carston 2002b; Ariel 2008, 2010; Belligh and Willems 2021), and thus between *meaning* and *sense(s)*.

All statistical analyses in the case studies were performed in collaboration with Ludovic De Cuypere. Two case studies presented in this dissertation are based on the following articles, co-authored with Ludovic De Cuypere and Klaas Willems: *Alternating constructions with ditransitive geben in present-day German* for the analysis of noncomplex *geben* and *Constructional variation with two near-synonymous verbs: the case of schicken and senden in present-day German* for the analysis of noncomplex *schicken* and *senden*. Some of the theoretical assumptions related to allostructional analysis were also addressed in the article *Allostructions revisited* and are in part inspired by the doctoral research project on encoded grammatical categories that is carried out by Thomas Belligh, who is also a member of the General Linguistics research team at Ghent University. The details of the three articles are as follows:

De Vaere, Hilde, De Cuypere, Ludovic and Willems, Klaas. 2018. Alternating constructions with ditransitive *geben* in present-day German. *Corpus Linguistics and Linguistic Theory*. <https://doi.org/10.1515/cllt-2017-0072>. Published online ahead of printing.

Contributions:

De Vaere, Hilde: data collection, annotation, investigation, interpretation results, writing, administration

De Cuypere, Ludovic: design corpus study, statistical data analysis, proofreading draft, interpretation results

Willems, Klaas: conceptualisation, supervision, proofreading draft

De Vaere, Hilde, De Cuypere, Ludovic and Willems, Klaas. 2021. Constructional variation with two near-synonymous verbs: the case of *schicken* and *senden* in present-day German. *Language Sciences* 83. <https://doi.org/10.1016/j.langsci.2020.101313>. Published online ahead of printing.

Contributions:

De Vaere, Hilde: data collection, annotation, investigation, interpretation results, writing, administration

De Cuypere, Ludovic: design corpus study, statistical data analysis, proofreading draft, interpretation results.

Willems, Klaas: conceptualisation, supervision, proofreading draft

De Vaere, Hilde, Kolkman, Julia and Belligh, Thomas. 2020. Allostructions revisited. *Journal of Pragmatics* 170, 96-111. <https://doi.org/10.1016/j.pragma.2020.08.016>

Contributions:

De Vaere, Hilde: investigation, writing, editing, administration

Kolkman, Julia: conceptualisation, investigation, writing

Belligh, Thomas: conceptualisation, supervision, writing

This dissertation is structured as follows. In the first chapter, I define the three research questions that guide the study. I also report on relevant previous research on the alternation, with a focus on English and German.

Chapter 2 provides a discussion of the terminology that I will use in the ensuing chapters. In Chapter 3, I outline the basic assumptions and concepts of the Three-Layer Approach to meaning that I will adopt with a view to providing an analysis of the semantic and pragmatic features found in the German data.

In Chapter 4, I discuss the methodology used for the corpus study in detail. This is followed by three case studies in Chapter 5, providing the findings of the statistical analyses of the data. In Chapter 6, I discuss the quantitative findings against the backdrop of the three research questions and the issues in need of further clarification that emerged from the overview of previous research.

Chapter 7 contains a summary and a conclusion.

Chapter 1 Research questions and research context

In this chapter, I first introduce the research questions this study sets out to answer. I then review previous research on alternating ditransitive constructions in a number of frameworks that I consider particularly useful with regard to my analysis of German data.

1.1 Research questions

The aim of this study is to investigate the relationship between IOC and POC by means of a large-scale corpus study in which I focus on a number of trivalent verbs that show the alternation described in the Introduction. The study is a synchronic investigation and addresses the following three research questions:

1. What is the extent of the constructional variation between IOC and POC with the verbs under study in present-day German as measured by their relative co-occurrence in contemporary corpus data?

The empirical analysis will consist of three case studies. The first case study is devoted to the (extent of the) alternation with the verb *geben* in present-day German. Many authors have until recently claimed that German *geben* only occurs in IOC and hence does not partake in the IOC/POC alternation, contrary to other verbs of transfer such as *schicken* ‘send’, *verkaufen* ‘sell’, *vermieten* ‘rent’ etc. (cf. among others Sabel 2002: 231; Rappaport-Hovav and Levin 2008: 162; Adler 2011: 20; Haspelmath and Baumann 2013). My corpus analysis will reveal whether this claim can be upheld.

Subsequently to the case study of *geben*, I will focus my attention on the near-synonym verbs *schicken* and *senden*. As pointed out in the Introduction, these two verbs are in the

middle of the Ditransitivity Hierarchy proposed by Croft et al. (2001) and present a challenge because not all occurrences of POC can alternate with IOC.

Finally, a third case study will be devoted to a number of morphologically complex verbs such as *übergeben*, *zurückgeben*, *weeterschicken*, *zurücksenden*, *verkaufen* etc. This case study consists of three parts. In the first two parts I will investigate the complex verbs with the base verbs *-geben* and *-schicken/-senden*, respectively. This will allow me to compare the alternation with noncomplex and complex verbs. The third part is devoted to three morphologically complex verbs, viz. *ausleihen*, *verleihen* and *verkaufen*. These verbs have in common that the noncomplex verbs *leihen* and *kaufen* do not sufficiently occur in the IOC/POC alternation to make a statistical analysis possible. Morphologically complex verbs have thus far largely remained undiscussed in most studies of the ditransitive alternation.

2. Are there specific morphosyntactic, semantic, pragmatic and information-structural factors that are associated with the two constructional variants IOC and POC (the latter either with *an* or *zu*)?

The study aims to chart the relative contributions of these factors to the alternation in a quantitatively appropriate way. To this end, representative databases are set up of naturally occurring sentences which are annotated for a large number of variables (Voice, Animacy, Definiteness, Givenness, Pronominality etc.) and analysed by means of logistic regression analyses and Conditional Inference Trees. The first type of analysis provides a binary outcome and presents good opportunities for a qualitative interpretation of the data. The second method determines the main predictors of the alternation by indicating splitting points (cf. Section 4.3). A Probabilistic Approach can shed light on the IOC/POC alternation with a number of different verbs. As mentioned in the Introduction, I consider the Probabilistic Approach as a powerful methodological tool to analyse large datasets annotated for a considerable number of factors. Ever since Gries (2003a), Bresnan et al. (2007), Bresnan and Ford (2010), Theijssen (2012), De Cuypere and Verbeke (2013), among others, attempts have been made to evaluate from a synchronic perspective the motivating morphosyntactic, semantic, pragmatic and information-structural factors that are assumed to operate simultaneously and have an impact on the alternation. However, the aforementioned studies concern the ‘dative alternation’ in English, whereas I focus on the IOC/POC alternation in German.

3. What are the implications that ensue from the corpus findings with regard to the theory of Argument Structure Constructions such as the ditransitive construction, in particular regarding a construction’s variation in form and meaning?

It is my aim to provide a theoretically coherent account of the data in which I focus on a layered approach of invariance and variation. Building on the theories of meaning of

authors such as Coseriu (1970, 1975 [1962], 1985, 1992 [1988]) and Levinson (2000), I will show that the quantitative findings can be accommodated within a theoretical approach based on the distinction between what is ‘encoded’ in the language and what has to be considered ‘inferred’ information. This distinction between code and inference, I will argue, applies to both form and meaning.

The empirical part of this study is corpus-based. I will investigate naturally occurring sentences in present-day German, taken from the DeReKo database of written language. I deliberately choose the term ‘corpus-based’ instead of ‘usage-based’ in light of the above-mentioned theoretical assumptions. In modern linguistics, ‘usage-based’ has come to stand for an approach that rejects the distinction between a ‘language system’ and ‘language use’ (Langacker 1987; Taylor 2002; Langacker 2008; Diessel 2017 among others), cf. Newmeyer (2003, 2005) for discussion. However, I will maintain that this distinction is helpful in understanding how encoded features of the ditransitive construction in German interact with properties of language use that are not encoded but inferred.

1.2 Previous research

Alternations are a linguistic phenomenon that has received attention in many languages and from the point of view of various theoretical frameworks. Although the focus of this study is on German, it seems fit to extend the scope of this section beyond that language, given that some theories have predominantly been applied to English. No other alternating pair has received so much attention as the alternation between the Double Object Construction and the Caused Motion Construction, also known as the ‘dative alternation’. According to Goldberg (2019: 32), “the Double Object Construction is to the study of language what the fruit fly is to biology”, and this comparison may very well be extended to the ditransitive alternation in general. As the alternation has also been studied in a number of other approaches, I will in this section take these into account as well, with a focus on theories and models that are particularly relevant to the present inquiry. However, the following overview of previous research is not meant to be exhaustive. In particular, an overview of alternation research in generative grammar is left out. English alternating structures have been studied extensively within the generative framework by e.g., Oehrle (1976); Larson (1988); Harley (2003) and for German by Sabel (2002), who however terms IOC the “Doppelobjektkonstruktion” and claims that POC does not exist with *geben* (Sabel 2002: 231), and cf. also Meinunger (2006). For well-informed accounts of the generative approach, I refer to Mukherjee (2005: 15-26), Levin

and Rappaport Hovav (2005: 196-201) and Levin (2015). The latter provides a chronological overview of the study of argument alternations over the last fifty years.

In my discussion of the various approaches, I will focus on the following issues: the description and organisation of the alternating verbs and their semantics; the semantics and syntax of the alternating constructions; the order of the arguments in both alternants; the prepositions occurring in the Prepositional Phrase (henceforth PP) in POC (in particular *an* and *zu* vs. *für*); and, finally, whether the analyses are based on corpus research or (primarily) on introspection.

1.2.1 Starke, Matzel, Wegener

One of the first scholars to investigate the variation between different kinds of arguments in present-day German, including the alternation between case-marked objects and Prepositional Objects, is Starke (1969-1970). It is worthwhile to review Starke's account in some detail because it not only situates the alternation in a broad perspective (historical, descriptive-grammatical, lexical-semantic, stylistic and normative) (Starke 1969a: I: 29), but also touches on many aspects of the alternation that have resonated in present-day approaches and might prove relevant for my analysis.

Starke's study is based on a corpus of approximately 12,000 sentences drawn from twentieth-century sources (Starke 1969b: II: 164). With respect to some of the alternating constructions he investigates, Starke describes the alternations as a result of the variable valency ("wechselnde Fügungspotenz") of the verbs. However, his study not only covers more alternations than just IOC/POC, but also a larger range of verbs than the trivalent verbs I examine. Based on his data, Starke attests the IOC/POC alternation with some 70 trivalent verbs which he calls "Richtungsverben"⁴ 'verbs of direction' (Starke 1970b: IV: 240). These include: *geben*, *abgeben* 'hand over', *ausgeben* 'spend', *bekanntgeben* 'announce', *sich hingeben* 'devote oneself to', *übergeben* 'hand over, pass', *weitergeben* 'pass on', *zurückgeben* 'give back, return', *schicken* 'send', *senden* 'send', *einsenden* 'send in', *übersenden* 'send', *leihen* 'borrow, lend', *ausleihen* 'lend, borrow', *verleihen* 'give, award' and *verkaufen* 'sell'. With e.g., *abgeben* and *weitergeben* POC is said to be more frequent than IOC (Starke 1969-1970: IV: 240).

According to Starke (1970a: IV: 238), the preposition *an* qualifies the argument in POC as a directional phrase, whereas the dative phrase in IOC profiles it as a non-spatial target ("Zuwendgröße") which is conceived as a person. However, this semantic-pragmatic

⁴ The description Starke (1969a: 38) initially uses with regard to these verbs is "Verben des Eigentumswechsels, des Mitteilens und des Verschweigens" 'verbs of property change, communication and concealment'. The different descriptions he uses are an indication for the multifunctionality of this group of verbs. This in turn forebodes, so it seems, some of the difficulties that CxG encounters with regard to the distinction between verbs expressing Caused Possession and verbs expressing Caused Motion (cf section 1.2.3).

distinction may be blurred and the PP can also be used to designate the ADDRESSEE (“bloßer Adressat”) (Starke 1970b: IV: 246). Another potentially explanatory factor for the use of POC discussed in older studies (e.g., Isačenko 1965: 21) is that a preposition is more transparent and unambiguous compared to the dative case. According to Starke (1970b: IV: 243), the transparency especially correlates with POC when there is no case ending or no article to mark the dative (e.g., when the RECIPIENT is a proper noun). The prepositional form is said to display more “Deutlichkeit” ‘explicitness’, in cases where the dative either functions as Indirect Object or as *dativus commodi* (Starke 1970b). However, Starke (1970b: IV: 239) points out that there is usually enough context to disambiguate the dative.

POC also allows for more constituent order variation than IOC (cf. Section 2.6). Starke (1970a: I: 32; V: 588) considers the flexibility of the arguments (“Beweglichkeit der Satzglieder”) as an important element in the syntactic variability of German. According to his account, the different word order possibilities help to ensure that not only syntactic, but also information-structural needs are met. However, Starke claims that there are certain positional restrictions with regard to information structure (“auf der Mitteilungsebene”). According to his findings (1969a: I: 32), it is impossible to use a dative phrase after a non-determined (i.e., indefinite) accusative with most verbs of giving and communication. In these cases, only POC is possible with the PP indicating the ADDRESSEE, e.g., *er schrieb einen Brief an General Washington* ‘he wrote a letter to General Washington’. POC is also preferred when given information precedes new information or when long arguments follow short ones (cf. Behaghel’s (1932) “Gesetz der wachsenden Glieder”). Other factors that influence constituent order and require the realisation of POC are when a pronominal dative object and a nominal accusative object (e.g., *Waffen* ‘weapons’) are combined. Because it is impossible for pronominal dative objects to follow a nominal accusative object, Starke argues, only POC is possible (i.e., the pronoun must be introduced by a preposition in THEME-RECIPIENT order: *Waffen <an alle> liefern* ‘deliver weapons to everyone’) (Starke 1970b: IV: 244). Moreover, when the RECIPIENT is moved from its canonical position by rightward extraposition (“Ausrahmung”) (Starke 1970b: IV: 244), then it is commonly expressed by a PP, e.g., *Täglich muss er sich wieder verkaufen an Zeitungen und Verleger* ‘Every day he has to resell himself to newspapers and publishers’. In such extraposition cases, a dative is rare, according to Starke.

Starke also addresses the difference between *an*-POC and *zu*-POC. Starke (1969a: I: 55) notes that the difference is sometimes due to the semantics of the nouns in the sentence; for instance, *schicken zu* always concerns a personal accusative object, whereas *schicken an* only concerns non-personal accusative objects. By contrast, IOC either leaves this semantic difference unexpressed or else adds a stylistic interpretation, e.g., when a person is considered as a thing, as in *Er schickt ihm die schöne Lesbia als Geschenk* ‘He sends him the beautiful Lesbia as a present’.

Older studies cited by Starke often focus on prescriptive rules and/or stylistic interpretations of the IOC/POC alternation (e.g., Agricola 1957; Erben 1960). Moreover,

while some authors claim that the two variants are not synonymous (e.g., Von Weiss 1953: 451), others insist that they are; for instance, *ich schreibe an meinen Vater* and *ich schreibe meinem Vater* ‘I write to my father’ are considered synonymous by Sütterlin (1902).⁵ Starke, too, raises the question whether the two alternants are synonymous (“bedeutungsgleich”) or not. However, Starke (1969a: I: 64) introduces an important conceptual distinction to which I will return in later sections. He argues that alternants may refer to the same facts (“Sachverhalte”) in the external world, and hence may be considered equivalent as far as reference (“Bezeichnung”) is concerned, but this does not necessarily entail that both are also equivalent “in der Rede”, i.e., in language use. For instance, trivalent verbs (“dreiwertige Verben”) may display alternative valency (“alternative Fügungspotenz”, (Starke 1969a: 64)) and occur in two different structures. For example, *ich schreibe ihr regelmäßig Briefe* ‘I regularly write her letters’ and *ich schreibe regelmäßig Briefe an sie* ‘I regularly write letters to her’ (example from Agricola (1962)) refer to the same extralinguistic event, but the fact that they are “übereinstimmend in ihrer logisch-grammatischen Funktion” does not necessarily imply that they are also semantically equivalent. Starke (1969a: 65) defines them as “abweichend in ihren Formen und ihren kommunikativ-grammatischen Funktionen”. According to Starke, the two structures may deviate in their forms and in their communicative-grammatical functions because the realisation of one particular variant may be subject to contextual restrictions, which he specifically situates on the syntagmatic level (lexical and grammatical) and along stylistic criteria. For instance, Starke (1969a: 58) assumes a stylistic motivation (“vermeide Wiederholung” ‘avoid repetition’) in the following text:

Dreimal haben sie einen gewissen Chajim Leibelschitz hinausgeführt und haben ihm gesagt: “So, jetzt erhängen wir dich.” Alle haben zu ihm gesagt: “Sei gescheit, Chajim, geh fort aus Grosnowice.” (L. Feuchtwanger, Oppermann 33)

‘Three times they led a certain Chajim Leibelschitz out and told him: “So now we will hang you.” Everyone told him: “Be clever, Chajim, leave Grosnowice.”’

Some of Starke’s claims regarding the IOC/POC alternation are challenged by Matzel (1976: 145; 176; 180–182). According to Matzel, the historically observable fact that dative phrases are increasingly replaced with PPs with *an* + accusative cannot be straightforwardly explained as an increasing desire of speakers for more transparency in speech (“Streben nach Verdeutlichung”), except for those cases where the dative needs to be disambiguated (whether it expresses a RECIPIENT or a BENEFICIARY). Not only do not all trivalent verbs allow for the two variants, there is no evidence that IOC is becoming less frequent in the language (cf. Matzel 1976: 172).

⁵ For a brief historical overview of relevant research, cf. Starke (1969a: I: 30–33).

According to Matzel (1976: 168; 179), it is unclear whether the alternation is semantically motivated or rather syntactically, in particular by word order preferences. Matzel (1976: 149-152) notices differences in the serialisation of the arguments (i.e., their linear ordering on the syntagmatic axis) related to the alternation: the dative object normally precedes the accusative object (i.e., RECIPIENT-THEME order) whereas the Prepositional Object tends to follow the accusative object (i.e., THEME-RECIPIENT order). Matzel (1976: 149-152, 179) links serialisation to valency (cf. Starke 1969a: I: 34-35). Arguments that are not required by the valency of the verb, e.g., BENEFICIARIES, have a different serialisation and alternation potential compared to arguments that are required by the valency of the verb, such as RECIPIENTS. The alternant to a sentence such as *Otto schreibt seinem Bruder einen Brief*, which is ambiguous ('Otto writes his brother/for his brother a letter'), presents no serialisation difference when the brother is the BENEFICIARY (i.e., *Otto schreibt für seinen Bruder einen Brief* 'Otto writes a letter for his brother'). Conversely, when the brother is the RECIPIENT, the alternant has a different word order, viz. *Otto schreibt einen Brief an seinen Bruder* 'Otto writes a letter to his brother'.

Interestingly, like Starke before him, Matzel (1976: 155-159) also lists trivalent verbs that display both alternants, but he expands Starke's list of 70 verbs to 106 verbs, covering noncomplex verbs, prefix verbs and particle verbs, even though he does not claim to give an exhaustive list. From Matzel's list, 14 verbs will eventually be included in this study⁶ (cf. Section 4.2). According to Matzel, the alternating verbs can be grouped as follows: one class consists of the verbs that express "ein Geben und Nehmen" 'giving and taking' in the broadest sense (i.e., not necessarily implying a change of ownership), another class is characterised by the notions "Kommunizieren" 'communicate' and "Verbergen" 'hide' (= 'deprive of information'). The verb classes are then further grouped by preposition. Particularly relevant for this study is the class of verbs that partake in the alternation between "Dativobjekt" (i.e., IOC) and "Präpositionalobjekt" (i.e., POC) with the preposition *an*. Alternations with *zu* are linked to *schicken* and *senden* (among other verbs) and verbs that are combined with adverbs of direction used as a prefix (e.g., *her*, *hinein*, *zurück*: *herbringen* 'bring (towards the speaker)', *hineinschicken* 'send in', *zurücksenden* 'send back'). Matzel also acknowledges the ambiguity of IOC with regard to the difference between RECIPIENTS, DESTINATIONS and BENEFICIARIES in cases such as (12):

- (12) *Otto bringt <dem Freund> die Mappe hinauf*
 'Otto is carrying the folder up to/for his friend'.

⁶ *Preisgeben* and *weeterschicken* are also part of this study but they are not listed by Matzel (1976: 164).

In sentences such as these, he claims, the dative NP unites the local goal (“das örtliche Ziel”) (‘zu’) and the personal designation (“die persönliche Bestimmung”) (‘für’) (cf. Matzel (1976: 153) citing Helbig (1973: 179), but also found in Wilmanns (1909: 660)).

Matzel (1976: 178) takes issue with Starke’s (1969a: 55) claim that e.g., for the verb *schicken* the choice of the prepositions *an* and *zu* may be due to the semantics of the nouns. Recall Starke’s claim that with an animate THEME the RECIPIENT can only be introduced by the preposition *zu*, whereas inanimate THEMES require *an*. Matzel counters this claim by referring to alleged examples in Klappenbach and Steinitz (1973: 3200-3201), but to the best of my knowledge, Klappenbach and Steinitz present no counterexamples to Starke’s claim.

Finally, regarding the meaning differences between IOC and POC, Matzel (1976: 176-177) establishes two different classes. The first class consists of alternations in which the dative NP and the Prepositional Phrase have different meanings, e.g., IOC vs. *zu*-POC or *in*-POC with verbs such as *schicken* and *senden* (Matzel 1976: 153). Compare (13) and (14). According to Matzel, there is a considerable difference because the institution that is named in the dative in (13), which is usually animate and seen as the RECIPIENT or ADDRESSEE, whereas the PP in (14) expresses a pure direction.

(13) *Otto sendet <dem Stationsvorsteher/der Zentrale/dem Dorf> eine Nachricht.*

‘Otto sends the stationmaster/the head office/the village a message.’

(14) *Otto sendet eine Nachricht <zum Stationsvorsteher/ in die Zentrale/ in das Dorf>.*

‘Otto sends a message to the stationmaster/to the head office/ to the village.’

The second class mainly consists of the alternation IOC vs. *an*-POC, which Matzel (1976: 177) interprets as synonymous, because a general distinction between RECIPIENT and ADDRESSEE is not considered feasible. If the meaning of the verb allows it, the dative can also express the ADDRESSEE. Hence, both alternants are interchangeable without a change in meaning. Moreover, they are also interchangeable syntactically, as they both contain arguments required by the valency of the verb.

(15) *Er schickt <dem Vater> sein Zeugnis.*

‘He sends his father his school report.’

(16) *Er schickt sein Zeugnis <an den Vater>.*

‘He sends his school report to his father.’

In short, according to Matzel, meaning differences mainly exist between dative NPs and Prepositional Phrases introduced by e.g., *in* and *zu* because there are semantic differences between the prepositions and because the PPs of *in*-POC and *zu*-POC have to be considered directional phrases. By contrast, there is no meaning difference between dative NPs and

Prepositional Phrases with *an* because the dative NP (usually animate) in the corresponding IOC functions as RECIPIENT or as ADDRESSEE. Hence, *an*-POC and IOC are interchangeable without a difference in meaning.

Wegener (1985) is arguably the best-known and most comprehensive study to date of the dative case in German. Wegener recognises that it is difficult to make a list of verbs that are subject to the alternation between dative NP and PP because it is a field that is subject to (diachronic) changes (Wegener 1985: 216). Wegener nevertheless proposes to distinguish two different classes of verbs that display the alternation. The first class (Wegener 1985: 217) concerns the alternation involving particle verbs, where the particle is identical to the preposition occurring in POC (e.g., *jemandem nachblicken* vs. *nach jemandem blicken* ‘follow someone with one’s eyes’). However, this alternation is of limited importance, because it is no longer productive, according to Wegener. The second class (Wegener 1985: 220) is more important for my research, as it comprises the alternation occurring with noncomplex and complex verbs such as *geben*, *verkaufen*, *verleihen*. Contrary to Matzel, Wegener (1985: 224) interprets the PP of both *an*-POC and *zu*-POC as expressing the ADDRESSEE, whereas in IOC the dative NP is said to encode a RECIPIENT. Only dative constructions, Wegener argues, allow for passivisation in which the third argument becomes the subject of the passive sentence (cf. Tesnière 2015 [1966]) and Section 1.2.2).

Regarding syntax, Wegener raises the question whether the historical change in word order (in the dative construction the dative NP usually precedes the accusative-NP, whereas in the PP-construction the accusative NP precedes the PP) is a result of a change in language type. Wegener (1985: 233) discusses word order in terms of serialisation of the different arguments that the trivalent verb takes. Usually in the German IOC, the first argument (the “prime actant” in Tesnière’s parlance) is coded in the nominative case, the second argument (“second actant”) in the accusative case and the third argument (“tiers actant”) in the dative case. In the remainder of this study, I will adopt the label ‘third argument’ to designate the complement which presents the alternation between dative NP and PP that is the subject of the present inquiry.

Wegener furthermore points out that with IOC the unmarked word order is Subj – V – IO – DO, with the semantic roles AGENT – RECIPIENT – THEME respectively in nominative, dative and accusative. Conversely, with POC the unmarked word order is Subj – V – DO – PP, viz. AGENT – THEME – RECIPIENT, with the RECIPIENT expressed by a preposition + accusative or dative case. According to Wegener, both in the main clause and in the subclause the change from IOC to POC is accompanied by the DO moving to the left and the IO (realised as a Prepositional Object, PO) moving to the right (cf. Figure 1).

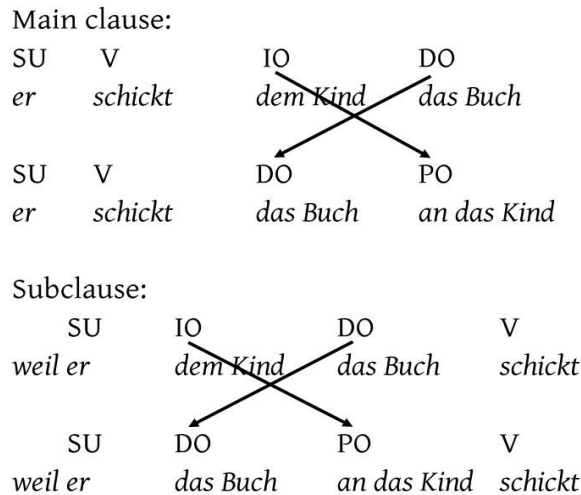


Figure 1 Serialisation of arguments (“actants”) – examples from Wegener (1985: 234)

Wegener (1985: 234) argues that the above serialisation changes observed in German may, however, not be the result of a change in the direction of the determination, but of a determination change. Taking the subclause order as the basic order, Wegener (1985: 241) argues that the verbs, when they occur in IOC (“die Dativkonstruktion”) are primarily determined by the DO, and that the complex (DO+V) is in turn determined by the IO as in (17). In POC the same verbs are primarily determined by the PO, and the complex (PO+V) is in turn determined by the DO as in (18). In both cases the direction of the determination is the same.

(17) (er (dem Freund (das Buch (schickt))))

‘(he (the friend (the book (sends))))’

(18) (er (das Buch (an den Freund (schickt))))

‘(he (the book (to the friend (sends))))’

This analysis, Wegener argues, entails that there must exist two semantically different but homonymous verbs: verbs of the type *jemandem etwas schicken* and verbs of the type *etwas an jemanden schicken*. Wegener calls them “Verbs of Transaction” and “Verbs of Transport”, respectively. Verbs of Transaction specify “an action that can be described as giving or taking in the broad sense, that implies a role as a recipient or ‘deprived’ person”, whereas Verbs of Transport “describe the removal or acquirement of an object and imply as a further complement a directional adverbial that appears as a goal or a starting point” (Wegener 1985: 242), my translation, HDV). The latter description also applies when the RECIPIENT is an animate being, but Wegener admits that in that case the difference with the Verbs of Transaction becomes very small. The characterisation of these trivalent verbs as expressing either Transaction or Transport reminds us of the classification of

these verbs in Construction Grammar into verbs expressing Caused Possession and verbs expressing Caused Motion (see Section 1.2.3).

Wegener considers it plausible that Verbs of Transaction can combine with a DO to form what she calls an ‘intransitive verb’ (e.g., (*das Buch schicken*)). This intransitive verb can subsequently be complemented with an IO, resulting in, e.g., *dem Kind (das Buch schicken)*. In this way, the trivalent verbs can be ordered into semantic classes: e.g., the class with the predicates *dem Kind (das Buch schicken)* ‘send the child the book’, *dem Mann (eine Frau besorgen)* ‘get a woman for the man’, *der Katze (Futter geben)* ‘feed the cat’⁷ can be described by means of one hyperonym: ‘benefit somebody’.

By contrast, it is less plausible to perform a semantic categorisation of the opposite clustering, whereby the verb together with the IO would result in a “transitive” verb (e.g., (*dem Kind schicken*)) which is then completed with a DO (e.g., *das Buch (dem Kind schicken)*, *eine Frau (dem Mann besorgen)*, *Futter (der Katze geben)*). In the latter case, no appropriate semantic categorisation of the events expressed by these predicates can be made because it is impossible to find a common denominator for all the possible objects. Wegener (1985: 243) surmises that the first categorisation process is easier because the semantic class of the IO, usually an animate being, is smaller than the semantic class of the DO, which is not only much larger but also much more specific. She assumes that the verb should primarily be determined by the more specific object and subsequently by the less specific object.

Accordingly, the Verbs of Transport with DO PO order should be easier to subsume under a class of transitive verbs that are complemented with a DO than under a class of intransitive locomotion verbs that are combined with a PO. For example, *den Brief (an den Freund schicken)* ‘send the letter to the friend’, *Waren (an den Kunden liefern)* ‘deliver goods to the customer’ are more easily captured under the hyperonym ‘provide something’ than as intransitive locomotion verbs that combine with a PO: *an den Freund (einen Brief schicken)* ‘to the friend send a letter’, *an die Mutter (einen Gruß ausrichten)* ‘to the mother send a greeting’. Wegener argues that for the Verbs of Transport, which typically combine with a PO, an analysis of the PO as the primary determiner is the more plausible one when it comes to explaining the differing word order possibilities and changes in determination that are observed in the ditransitive alternation. After examining the semantic coherence of each object with the verb, she argues that the proximity of an object to the verb is a case of syntactic iconicity: the primary determiner is found next to the verb (Wegener 1985: 245; 1986: 14).

Wegener (1985: 221) extends the factor word order variation so as to also involve the definiteness of the arguments. Consequently, she distinguishes eight combinatory

⁷ NB In her enumeration, Wegener also includes BENEFICIARIES with monotransitive verbs: e.g., *der Oma (eine Freude machen)* ‘please the grandmother’.

possibilities in German with regard to the expression of a content such as ‘he sends the/a book to the/a child’, cf. (19)

- | | | |
|------|--|---|
| (19) | <i>er schickt dem Kind das Buch</i> | <i>er schickt das Buch an das Kind</i> |
| | <i>er schickt das Buch dem Kind</i> | <i>er schickt an das Kind das Buch</i> |
| | <i>er schickt dem Kind ein Buch</i> | <i>er schickt ein Buch an das Kind</i> |
| | <i>*er schickt ein Buch dem Kind</i> | <i>er schickt an das Kind ein Buch</i> |
| | <i>?er schickt einem Kind das Buch</i> | <i>er schickt das Buch an ein Kind</i> |
| | <i>?er schickt das Buch einem Kind</i> | <i>?? er schickt an ein Kind das Buch</i> |
| | <i>er schickt einem Kind ein Buch</i> | <i>er schickt ein Buch an ein Kind</i> |
| | <i>*er schickt ein Buch einem Kind</i> | <i>er schickt an ein Kind ein Buch</i> |

According to Wegener (1985: 222), (cf. also Starke 1970b: 243), POC is associated with more serialisation possibilities than IOC. 7 of the 8 POC variants are judged grammatical against only 4 variants of IOC. Because POC has more syntactic options than IOC, Wegener concludes that there are more information-structural possibilities in POC as well, which, according to Wegener, is an advantage of POC for the speaker. However, it must be pointed out that Wegener’s judgment here is based on introspection only and that her claims are not supported by any corpus data. It remains to be investigated whether her observations concerning word order in IOC and POC can be corroborated by corpus findings.

According to Wegener (1985: 232), the (especially syntactic) “advantages” of POC over IOC with respect to the alternation under study can be summarised as follows:

- [1] Arguments can change places more freely in POC than in IOC, cf. (19) and Wegener (1985: 222);
- [2] The third argument can be realised in a freer way because it is less dependent on the accusative NP. When the accusative NP is elided, a PP is still possible, whereas a dative NP is not, compare: *Er vermietet nicht an Ausländer* vs. **Er vermietet Ausländern nicht* ‘He does not rent to foreigners’.
- [3] Nominal dative NPs cannot occur twice in different roles in a sentence, whereas PPs can, compare **Er stiehlt seiner Freundin dem Juwelier einen Ring* ‘He steals (for) his girlfriend a ring at the jeweller’s’ vs. *Er stiehlt seiner Freundin einen Ring beim Juwelier* and *Er stiehlt einen Ring für seine Freundin beim Juwelier*.
- [4] The third argument is more facultative as a PP, compare the following sentences with an omitted RECIPIENT: with the verb *verschenken* (*Er hat alle seine Bücher*

verschenkt ‘He gave away all of his books’), which normally takes a PP⁸, the third actant is more facultative than with the verb *schenken* (*?Er hat alle seine Bücher geschenkt* ‘He gave all his books as a gift’), which normally takes a dative NP. Wegener provides an equivalent example with the verbs *vergeben* vs. *geben*: *Er hat den Auftrag vergeben* vs. **Er hat den Auftrag gegeben*.

- [5] there is an animacy restriction with regard to IOC, whereas POC is neutral in that respect.

According to Wegener, there is only one (syntactic) disadvantage connected with POC, viz. it is not possible to convert the third argument of an active POC sentence into the subject of a *bekommen*-passive POC sentence. Compare (20) with (21). Importantly, Wegener concludes that the animate referent of the PP with *an* and *zu* therefore has to be considered an ADDRESSEE, whereas the animate referent of the dative-NP is a real RECIPIENT (“Empfänger”).

- | | |
|---|--|
| <p>(20) <i>Peter schickt</i> <Hans> [<i>den Brief</i>].
 ‘Peter sends Hans the letter.’</p> | <p><i>Hans bekommt den Brief geschickt</i>.
 ‘Hans receives the letter.’</p> |
| <p>(21) <i>Otto verschenkt</i> [<i>das Buch</i>] <an Anna>.
 ‘Otto is giving the book to Anna.’</p> | <p><i>*Anna bekommt das Buch (von Otto) verschenkt</i>.
 ‘Anna receives the book (from Otto).’</p> |

As many other researches before and since, Wegener expresses the well-established view in the history of German grammar that the dative phrase in IOC normally encodes animate objects (Dal 1966: 41; Wegener 1985: 13-15, 166-168; Olsen 1997: 308-311; Zifonun et al. 1997: 1308-1312; Duden 2006: §1248-1253; Eisenberg 2006: 295-296). The fact that the more ‘personal’ case form “Dativ”, with its feature /+animate/, is gradually being replaced in German by a Prepositional Phrase, has to be considered a semantic loss, according to Wegener: the semantic components that are traditionally associated with the dative case are ousted, viz. (1) direct or even personal participation, (2) consciousness of the referent, (3) higher degree of “Betroffenheit” ‘involvement’, and (4) higher intensity of the relation between the verb and NP-referent. In Wegener’s opinion it remains to be seen whether the PP-constructions that gradually replace the constructions with a dative NP will also gradually take over the meaning nuances of the dative case.

⁸ The valency patterns of the verb *verschenken* are not described in E-VALBU, in DWDS the only example is with POC (*Bonbons an Kinder verschenken* ‘give sweets to children’), a simple search (100 attestations with “&verschenken”) in DeReKo corroborates this fact: 10% of the attestations is in POC, none in IOC.

1.2.2 Valency Theory and valency dictionaries

Valency Theory (VT) has played a major role in German linguistics in the 20th century and continues to do so (cf. Ágel 2017). Previous research along these lines is especially relevant for this dissertation, because VT focuses on the role of the verb. Tesnière (2015 [1966]), ‘the father’ of the modern Valency Approach, compared the relations between the sentence verb and its arguments to the chemical relations in the structure of a molecule. ‘Valency’ is a verb’s property to take either no, one, two or three arguments (quantitative valency) and to assign specific functions to them in the sentence (qualitative valency). It must be mentioned that the exact relation between verb meaning and verb valency is a matter of some controversy in VT (Ágel 2000: 45, 113-118; Coene 2006: 90-124; Eisenberg 2006: 71). It is generally assumed that verb meaning and verb valency are intimately related, but it is unclear exactly to what extent meaning and valency are associated (e.g., Levin 1993: 11) and Perini (2015: 260). VT usually makes a distinction between logical, syntactic and semantic valency (cf. Welke 1988: 102). Logical valency concerns the validity and truthfulness of the state of affairs expressed in the sentence, syntactic valency relates to the syntactic function of the complements and whether they are obligatory or facultative, semantic valency refers to the semantic properties of the arguments, e.g., whether they are animate or inanimate. The distinction between syntactic and semantic valency is ordinarily reflected in valency dictionaries, which not only provide the common syntactic patterns (“Satzbaupläne”) associated with verbs but also the corresponding senses (“Lesarten”) (cf. Dominguez Vázquez 2018: 320).

Recent examples of the Valency Approach with regard to German are Welke (2011); Fischer (2013); Ágel (2017), among others. “Valency Theory (VT) is based on the very simple idea or observation that words pre-determine their syntactic and semantic environment” (Ágel and Fischer 2010: 238). Under this view, the verb as a lexical item is the central element in the sentence, capable of projecting an argument structure pattern (which in German linguistics has traditionally been called a “Satzbauplan”, (cf. Duden 2006: 932; 2016: 927). The projected argument structure pattern is said to instantiate the verb’s valency. Heringer’s famous statement: “Ein Verb, das ist so, wie wenn man im dunklen Raum das Licht anknipst. Mit einem Schlag ist die Szene da” ‘A verb, that is like turning on the light in a dark room. All of a sudden, the scene is there’. (Heringer 1984: 49) elucidates in a succinct way how the verb determines the number of arguments, the types of arguments, the semantic roles they represent, and also the degree of optionality of different arguments or roles. VT distinguishes arguments (Fr. “actants”) from adjuncts (Fr. “circonstants”). Arguments are as a rule expressed by a Noun Phrase (NP) or a phrase equivalent to a NP (e.g., a *that* clause), whereas adjuncts usually have the form of an adverbial phrase, indicating e.g., place or time.

Trivalent verbs are trivalent because they bind three arguments: In German the first argument (“prime actant”) is coded in the nominative case, the second argument (“second actant”) in the accusative case and the third argument (“tiers actant”) in the dative case. Under a Valency Approach, with alternating trivalent verbs such as the verbs under study, the preposition (e.g., *an*) introducing the third argument can be considered as a marker of the third actant (Tesnière 2015 [1966]: § 52). According to this view, the ditransitive construction concerns IOC as well as POC. Yet the preposition can also introduce an adverbial complement that is a directional PP such as in *Er schickt sie an den Rhein* ‘He sends them to the river Rhine’. However, because the latter structures never alternate with IOC, they cannot be considered ditransitive. Note, moreover, that certain accounts (such as Construction Grammar) entertain a more narrow view on the alternation and only consider sentences in which the RECIPIENT argument is not preceded by a preposition as ‘ditransitive’ (Goldberg 1995: 89). With regard to German, this would mean that “genuine ditransitive constructs” could only occur with “indirect object verbs” combined with a dative-NP (cf. Hens 1995: 78), which is not the stance taken here (cf. Willems 2020 for extensive discussion).

In line with the Valency Approach, valency dictionaries such as Engel and Schuhmacher (1978) and Helbig and Schenkel (1983) list all possible argument structures that a verb can occur in. I am particularly interested in the listed valency patterns for the verbs under study and whether the alternating forms I find in the corpus are also indicated in the dictionary.

The *Valenzwörterbuch deutscher Verben* (VALBU) (Schuhmacher et al. 2004) and its electronic version (E-VALBU in “*grammis*”) mainly list noncomplex verbs. There are only few complex verbs with an entry. It was not possible, e.g., to look up the valency of the verbs *ausleihen*, *verleihen*, *preisgeben*, *übergeben*, *weitergeben*, *zurückgeben*, *einschicken*, *weitschicken*, *zurückschicken*, *einsenden*, *übersenden* and *zurücksenden*. Only *abgeben* and *verkaufen* are listed in VALBU and E-VALBU.

It is striking to see that the printed version of VALBU (2004) does not indicate POC as a possible pattern with the verb *geben*. By contrast, the more recent E-VALBU does mention POC as an alternant in five ditransitive cases of *geben*: “Gelegentlich wird statt des K_{dat} (= Dativkomplement) ein K_{prp} (= Präpositivkomplement) [*an* + Akkusativ] verwendet” (cf. also Sommerfeldt and Schreiber 1996: 69; Ágel 2017: 503). This might suggest that POC is gaining ground with *geben* in present-day German, but also that the preposition *an*, when it occurs in combination with *geben*, is considered as a non-exchangeable preposition, in contrast to adverbial complements in which prepositions are freely exchangeable. (cf. E-VALBU: “Die Präposition als Kopf der Präpositionalphrase bzw. innerhalb des Präpositionaladverbs ist dabei vom Verb bestimmt und nicht austauschbar” ‘The preposition as the head of the Prepositional Phrase or, respectively, within the prepositional adverb, is determined by the verb and is not interchangeable’).

With regard to the verb *schicken*, E-VALBU lists six valency patterns, two of which can be ditransitive. The first (*jemand schickt etwas jemandem bzw. irgendwohin* ‘someone sends something to somebody or somewhere’)⁹ can be realised with a dative complement (“Dativergänzung”, hence IOC) or an adverbial complement (which can be a PP, hence POC). The THEME is either a concrete object (*Pakete* ‘parcels’, *Abfall* ‘waste’, *einen Brief* ‘a letter’) or an abstract object (*eine Stellungnahme* ‘statement’), which is then often information. The RECIPIENT can be a person (*mir* ‘to me’, *ihnen* ‘to them’) or an institution (*der Stadt* ‘to the city’) if it is realised as a dative. In case the dative is not animate (e.g., *der Stadt*), the sentence qualifies as “indirekte Charakterisierung” ‘indirect characterisation’. If the RECIPIENT is realised as a PP, it can indicate a place (indirectly a person) (*an das Amt für Stadtentwicklung und Statistik* ‘to the urban development and statistics office’, *an Präsident Kennedy* ‘to president Kennedy’). Several prepositions, including *auf*, *in*, *nach* and *an*, are possible in this pattern and the adverbial complement is interpreted as “direktivisch” ‘directional’.

The second potentially ditransitive reading (*jemand schickt jemanden/etwas jemandem bzw. irgendwohin* ‘someone sends someone/something to someone or somewhere’) concerns the sending of a person or a vehicle to another person or to a place [“indirect person”/institution/event] or *Handlung* ‘action’. This reading is only illustrated with either IOC (*Ihnen*) or zu-POC (*zu Ihnen*) and with other prepositions such as *auf*, *nach*, *in* which indicate the destination. The zu-POC realisation (e.g., *zum Backer* ‘to the baker’) is also considered “direktivisch” ‘directional’.

Senden has two entries in E-VALBU. *Senden II* with the meaning ‘to broadcast’ is not trivalent. *Senden I* has three possible ditransitive valency patterns, each of which is considered “gehoben” ‘formal’. The first (*jemand sendet jemandem etwas irgendwohin* ‘somebody sends something to someone somewhere’) has ditransitive realisations in IOC and in POC with *an* and *zu*, which are again interpreted as directional: “Zielort” ‘destination’, e.g., *an unsere Personalabteilung* ‘to our Human Resources Department’, *an die deutsche Botschaft in Manila* ‘to the German Embassy in Manila’, *zu der Ausstellung über Miró nach Ludwigshafen* ‘to the exhibition about Miró in Ludwigshafen’). The second reading (*jemand sendet jemanden jemandem bzw. irgendwohin* ‘someone sends someone to someone or somewhere’) corresponds to the second reading of the verb *schicken* but is considered to belong to formal language. The third reading (*jemand/etwas sendet etwas irgendwohin* ‘someone/something sends something somewhere’) is only realised in POC, with several prepositions, including *in*, *aus*, *über*, *auf*, but also *an* and *zu*. The inanimate THEME is illustrated with *Signal* ‘signal’ and *Lichtwellen oder Mikrowellen* ‘light waves or microwaves’, indicating that this reading is mainly found in technical discourse.

⁹ Here and elsewhere I adopt the argument order in VALBU and E-VALBU.

According to E-VALBU, the verb *leihen*¹⁰ alternates between IOC and *an*-POC, in which the third argument is characterised as K_{prp} , indicating that it has to be considered as a “Präpositivkomplement”: the preposition *an* cannot be replaced freely by any other preposition but is strictly determined by the verb, e.g., as in *denken an* ‘think of’ or *warten auf* ‘wait for’. For the first valency pattern *leihen* <*an*>, both dative and prepositional examples are provided. However, *an*-POC is only illustrated with PPs with an additional relative clause (*Geld leihen an Leute, die sie nicht kennen* ‘lend money to people they do not know’). The second pattern is described as formal and solely illustrated with IOC examples (*Der Vormund hat den Kindern seinen Beistand geliehen* ‘The guardian has provided assistance to the children’, *Wir haben unser Vertrauen einem Unbekannten geliehen* ‘We have put our trust in a stranger’).

E-VALBU lists ten valency patterns for the verb *abgeben*, several of which can be considered to be ditransitive. Only the fourth (*jemand gibt jemandem/etwas bzw. an jemanden/etwas ab*), meaning *etwas an jemanden abtreten* ‘give something away to someone’, *überlassen* ‘entrust’, is attested with IOC and *an*-POC examples. The next five patterns only come with *an*-POC examples: the fifth (*jemand gibt etwas an jemanden ab*) meaning *etwas nicht mehr ausüben, abtreten*, the sixth (*jemand gibt etwas an jemanden ab*) meaning *etwas verlieren* (in der Sportsprache ‘in sports language’), the seventh (*etwas gibt etwas an etwas ab*) meaning *etwas absondern*, the eighth (*jemand leitet etwas an jemanden bzw. irgendwohin weiter*), the ninth (*jemand gibt etwas für/gegen irgendwieviel an jemanden ab*) meaning *etwas verkaufen*.

For the verb *verkaufen* (*jemand verkauft jemandem/an jemanden etwas für irgendwieviel* ‘someone sells somebody/to somebody something for a certain price’) examples in IOC and POC are provided, but the *an*-PP is called a “Präpositivkomplement”. Moreover, E-VALBU remarks that the sale of persons usually concerns a slave or a professional sportsman.

The Valency Approach is adopted in the Duden *Grammatik*, which is one of the most important reference grammars of present-day German. According to Duden (2006: 932); (2016: 856), the syntax and general meaning (“Gesamtbedeutung”) of a sentence are mainly determined by the verb and its valency pattern. Duden draws on the concept of “Satzbauplan”, defining it as “eine Konfiguration, die aus einem Prädikat (prototypisch einem Verb) und dessen Ergänzungen besteht” ‘a configuration consisting of a predicate (prototypically a verb) and its complements’. Duden (2006; 2016: 931) lists 34 “Satzbaupläne” in total. Those that relate to the subject of this study are listed under “Prädikat mit drei Ergänzungen” ‘predicate with three complements’, IOC (cf. Figure 2)

¹⁰ Recall that, because of lack of data (the ratio was 419 IOC versus 5 POC and oversampling was not possible), I did not include the verb *leihen* in this study.

unambiguously corresponds to pattern number 17 in the Duden list, whereas POC presents some similarities with pattern number 19. In Duden, the third argument in pattern 19 is characterised as a “Präpositionalobjekt”, which corresponds to the “Präpositivkomplement” strictly determined by the verb as mentioned in E-VALBU (see above in the description of *leihen* and *verkaufen*). However, this interpretation poses a problem which is related to the interchangeability of the preposition. According to Duden (2006; 2016: 851) the verb governs the preposition in a “Präpositionalobjekt”, and it is not interchangeable. Precisely the fact that the preposition is not freely selectable indicates that it introduces an object, not an adverbial. However, semantically it is similar to an adverbial. According to Duden (2006: 851-852; 2016: 851) there is no clear boundary between objects and adverbials, and the domain has to be considered as a transition zone. It is this zone that I address in the present study.

Another problem arises with respect to the alternation. Duden (2006: 852; 2016: 853) states that “Präpositionalobjekte lassen sich nicht durch präpositionslose Fügungen ersetzen”, which means that POC instances such as *Der Wetterdienst warnt vor dichtem Nebel* ‘The weather service warns for thick fog’ or *Er gibt Zucker an den Salat* ‘He adds sugar to the salad’ cannot alternate with IOC. While this observation is in accordance with the data, Duden (2006: 400) also concedes that “die Unterscheidung zwischen Präpositionalobjekt und Adverbialergänzung lässt sich nicht präzise ermitteln”,¹¹ opening the possibility for alternation between an adverbial realisation introduced by a preposition (POC) and IOC.

17 [Subjekt] + [Dativobjekt] + [Akkusativobjekt] + Prädikat
e.g. <i>Der Junge schenkte seiner Mutter Rosen.</i>
‘The boy gave his mother roses.’
19 [Subjekt] + [Akkusativobjekt] + [Präpositionalobjekt] + Prädikat
e.g. <i>Der Intendant bat die Zuschauer um Geduld.</i>
‘The director asked the audience for patience.’

Figure 2 “Satzbaupläne” 17 (1490) and 19 (1494) according to Duden (2006) and (2016: 932-933)

Duden mentions a further pattern (number 24, cf. Figure 3) which shows the same form as pattern number 19.

¹¹ However, according to Duden (2016: 401), the difference is “im vorliegenden Zusammenhang nicht von großer Bedeutung” ‘not of great importance in the present context’.

24 [Subjekt] + [Akkusativobjekt] + [Lokaladverbiale] + Prädikat e.g. <i>Ich hänge das Bild an die Wand.</i> ‘I hang the picture on the wall.’

Figure 3 Duden “Satzbauplan” 24 (1502)

However, in this pattern the third argument is termed a “Lokaladverbiale”, and the adverbial can be realised by various prepositions, including *an*, *auf*, *in*, *nach* and *zu*. When sentences instantiating pattern 24 express a pure destination (e.g., with *in*, *auf*, *nach*), the realisations of this “Satzbauplan” are not included in my analysis because they do not alternate. However, pattern 24 cannot be disregarded altogether because some attestations with *an* and *zu* do alternate with IOC. This entails that they have to be considered as well.

Duden (2006: 938) points out that verbs do not always match a single “Satzbauplan”: “Auch bei gleicher Bedeutung gibt es nicht selten Schwankungen in der Rektion” ‘Even with the same meaning, there are not infrequently variations in case government’. One of the examples given of this variation is the alternation between (22) and (23), which is precisely the alternation under study here.

(22) *Der Enkel schreibt <der Großmutter> [einen Brief].*

‘The grandson writes his grandmother a letter’

(23) *Der Enkel schreibt [einen Brief] <an seine Großmutter>.*

‘The grandson writes a letter to his grandmother’

1.2.3 The Construction Grammar Approach

In search of how to explain the observation that certain verbs can be inserted into argument structures that do not match their valency (famously, *He sneezed the napkin off the table* given that *sneeze* is clearly not a trivalent verb), projectionist (or lexicalist) approaches (such as e.g., Rappaport Hovav and Levin 1998) have traditionally suggested to posit new lexical entries for those verbs. This entails that a verb can have multiple lexical semantic representations (cf. Rappaport Hovav and Levin 1998: 98). However, the downside of such an approach is it leads to “rampant polysemy”, as certain verbs will need to be listed with a number of functions that correspond to various valency patterns. Construction Grammar (e.g., Goldberg 1992: 45; Goldberg 1995; cf. Hilpert 2014) solves this problem by attributing a schematic meaning to the Argument Structure Construction

itself, instead of solely to the verbs and arguments that instantiate it. This Constructionist Approach has been increasingly popular over the last three decades. According to Goldberg (2006: 5):

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency.

Under this definition, both the Double Object Construction (DOC) (24) and the Caused Motion Construction (CMC) (25) qualify as fully-fledged Argument Structure Constructions.

(24) *James e-mailed Matt a document.*

(25) *James e-mailed a document to Matt.*

Although both sentences have similar meanings and are considered lexically equivalent, according to Construction Grammar (CxG) they are not related syntactically. The alternation is analysed as a result of ‘semantic overlap’ (“it is a fact about the world that causing something to move somewhere is systematically related to causing someone to receive something” (cf. Goldberg (1992: 409) and (1995: 91)). The assumption that DOC and CMC must be considered as constructions in their own right, is in recent studies corroborated by experimental studies and analyses of fMRI data, cf. Goldberg (2019: 36). In other cognitive accounts (such as e.g., Kasper 2015), DOC and CMC are said to belong to two different “conceptualization schemas”.¹²

It is important to note that in constructional accounts, the term ‘Ditransitive Construction’ is synonymous with ‘Double Object Construction’ and thus only refers to (24) but not (25). This is, however, questionable from a typological point of view. According to Malchukov et al. (2010: 1) “the formal manifestation of the arguments is irrelevant” with regard to a typologically valid definition of ‘ditransitive construction’ and only functional criteria should be taken into account. For German, this entails that ‘ditransitive construction’ and ‘Double Object Construction’ should be clearly distinguished, cf. Willems (2020) and Section 2.4.

An important aspect of CxG is the way in which ASCs are related to each other. In line with prototype theory, Goldberg (1995: 4) assumes that ASCs are associated with a “family of distinct but related senses”, hinting at polysemy. She rejects an analysis in which a construction would have one single, fixed abstract sense (“an abstractionist account”) (Goldberg 1995: 31, 34), which would entail monosemous constructional meanings. The

¹² According to Kasper’s (2015: 425) account of the German “dative alternation”, IOC (which he calls DOC in analogy to the English pattern) shows an “asymmetrical bi-directionality” because the dative referent “is required to move toward the object that is moving toward him”, whereas in POC this bi-directionality is lacking.

collection of constructions, ‘the constructicon’ (Goldberg 2006: 64) is organised as a “highly structured lattice of interrelated information” (Goldberg 1995: 5), containing systematic generalisations across constructions. Within the network, there exist inheritance relations between constructions “that are related both semantically and syntactically” (Goldberg 1995: 72), so that lower level constructions (i.e., more lexically ‘filled’ ASCs) inherit properties from higher level constructions (i.e., more schematic ASCs).

For the “ditransitive syntactic pattern” (Goldberg 1995: 75), the family of related senses is represented as a radial network with ‘X CAUSES Y TO RECEIVE Z’ as the central sense. Polysemy links connect the central sense to other senses such as ‘X ENABLES Y to RECEIVE Z’, ‘X ACTS to CAUSE Y to RECEIVE Z’, and so forth (cf. Figure 4).

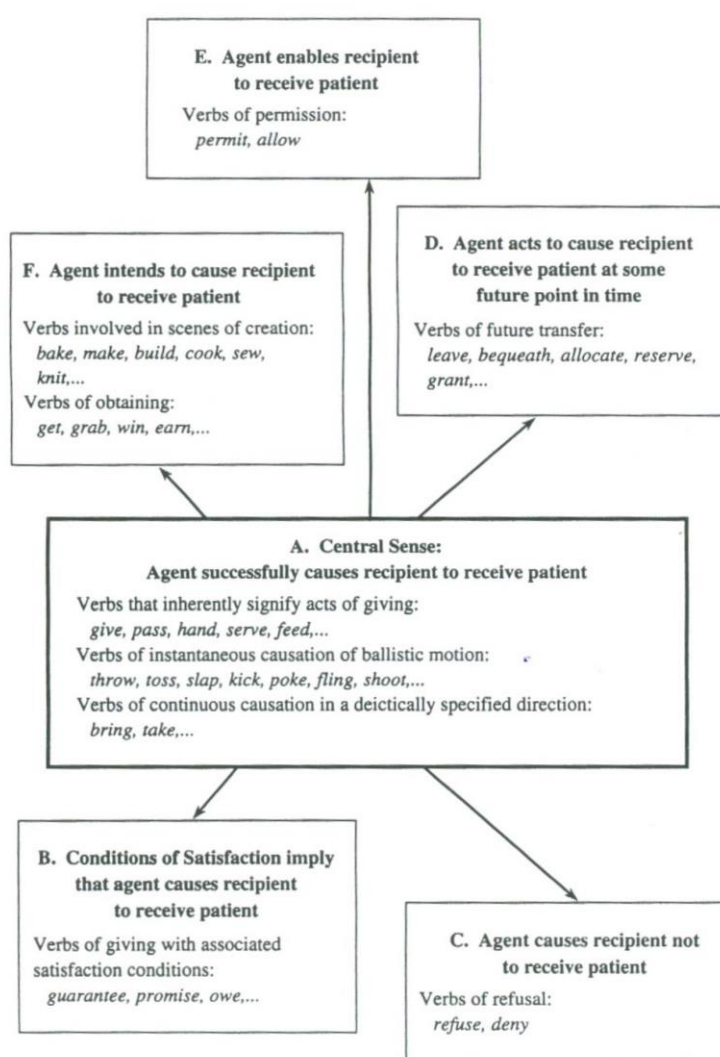


Figure 4 The six senses of the Ditransitive Construction according to Goldberg (1995: 38)

Similarly, the Caused Motion Construction also comes with its own associated polysemy patterns. Although the polysemy links observed in the Ditransitive

Construction and the Caused Motion Construction may be similar, they “must be learned for each individual construction” (Goldberg 1995: 76).

According to the ‘Principle of No Synonymy of Grammatical Forms’, “a difference in syntactic form always spells a difference in meaning” (Bolinger 1968: 127; cited in Goldberg 1995: 3). Goldberg (1995: 92) therefore attributes a pragmatic difference to the seemingly synonymous sentence pair (24) and (25) and associates it with a difference in focus. In cases such as (25) and also (26) the meaning is said to be identical to DOC (X CAUSES Y to RECEIVE Z) while the form is that of a CMC (NP V NP PP). A metaphorical extension “I_M – Transfer of Ownership as Physical Transfer”, is assumed to explain the discrepancy. The metaphor implies that if the document moves from the AGENT to the RECIPIENT, there is also a change of possession and that in cases such as (26), where the THEME is a house, motion does not need to be literally implied.

(26) *Bill gave his house to the Moonies.*

Importantly, Goldberg (1995: 90) claims that the metaphor allows the CMC to encode the transfer of possession. She terms this semantic extension the ‘Transfer Caused Motion Construction’. This construction is “semantically” synonymous with the Ditransitive Construction, but it differs from the latter “pragmatically” because the RECIPIENT is profiled differently in terms of information structure. More specifically, Goldberg argues that the RECIPIENT is in focus in the Transfer Caused Motion Construction (cf. *John gave an apple to Mary*), whereas it is nonfocused in the Ditransitive Construction. There, the focus is on the THEME, usually an indefinite NP (cf. *John gave Mary an apple*) (Goldberg 1995: 92).

In constructional accounts of English, sentences such as (27) are also considered ditransitive and labelled DOC accordingly, because – following generative accounts that derive (27) from (28) – they are considered as the “output” of an “input” with *for* (28). Hence they are characterised as Benefactive Ditransitives (cf. Goldberg 2006: 26) and treated as the fifth extension of the Ditransitive Construction (Goldberg 1995: 38), linked to the central sense via a polysemy link (cf. sense F in Figure 4). Moreover, Goldberg (2019: 33) states that the DOC in (27) “can only mean that *Sam* bakes the cake with the intention of giving it to *Chris*”. Typologically speaking, *Chris* is a BENEFICIARY in (28) and a RECIPIENT-BENEFICIARY in (27) (Kittilä 2005: 278), (cf. Willems 2020).

(27) *Sam baked Chris a cake.*

(28) *Sam baked a cake for Chris.*

Semantically, DOC is associated with the semantics of “giving”, of which the central sense involves a volitional agent (Goldberg 1995: 143-145).¹³ A volitional agent transfers

¹³ Goldberg makes an exception for those non-volitional subjects in sentences that are instances of the metaphor “causal events as transfers” e.g., *She gave me the flu*.

an object to a willing recipient successfully (Goldberg 1995: 33,141). It is important to bear in mind that constructional accounts prefer to take a prototypical concrete use as a starting point for their analysis. As a consequence, more abstract uses such as (29) are also explained as “metaphorical extensions”. The source domain of a metaphor is always concrete, and concrete meanings “have been shown to be more basic both diachronically and synchronically” (Goldberg 1995: 33). The often cited example, first discussed by Green (1974: 157), for successful transfer is (30), with the alternant (31) meaning that John was less affected by the teaching and that the teaching was hence less successful as in (30) (see De Cuypere 2008: 151 for discussion).

- (29) *Mary gave Joe a kiss/an idea.*
- (30) *Mary taught John linguistics.*
- (31) *Mary taught linguistics to John.*

Furthermore, in English, another semantic constraint is that the RECIPIENT of a Ditransitive Construction must be animate, rendering sentences such as (32) ungrammatical. However, here again metaphorical extensions may explain putative exceptions such as (33).

- (32) **She brought the border a package.*
- (33) *The music lent the party a festive air.*

Importantly, Goldberg’s CMC covers more instantiations than those that are the subject of this study, because also purely destinational sentences such as (34) resort under the Caused Motion Construction. Corresponding sentences in German were excluded from this study from the outset, given that the PP in these sentences does not alternate with a dative NP. In Goldberg’s account, sentences such as (34) are semantically defined as ‘X CAUSES Y to MOVE Z’, which is considered the central sense of the CMC (Goldberg 1995: 162).

- (34) *Sam sent him to the market.*

According to Goldberg (2006: 33), (35), (36) and (37) all pattern as CMC, with the PPs indicating the locational PATH that must be travelled. However, only (35) has a paraphrase that is a DOC. By treating all these sentences in terms of the CMC, Goldberg lumps together RECIPIENTS (35) and DESTINATIONS (36).

- (35) *Mina sent a book to Mel.* (vs. *Mina sent Mel a book*)
- (36) *Mina sent a book to Chicago.* (vs. **Mina sent Chicago a book*)
- (37) *Mina sent a book through the metal detector.*

Note, however, that according to Goldberg, *Mina sent Chicago a book* is acceptable if Chicago is used metonymically to indicate, e.g., one or more persons who live, work etc. in Chicago (cf. the Animacy Constraint). Attestations such as these can thus either be treated

as exceptions or as cases of coercion. I will return to the issue of the Animacy Constraint in Section 1.2.4.

As a reaction to Goldberg's representation of the Ditransitive Construction as a polysemic network with six senses (cf. Figure 4), Kay (2005: 73) provides a theoretically somewhat different approach. Kay not only argues that in Goldberg's concept of constructional polysemy there are a number of superfluous senses, but he also favours an analysis that is less in need of "overriding" certain previously established principles to account for putative exceptions. Kay postulates a single, unified structure: Kay's (2005: 78) more 'abstractionist' account introduces an analysis in which the six ASCs defined by Goldberg are said to belong to only one construction, which he coins 'Abstract Recipient Construction'. The Abstract Recipient Construction or Abstract RC (cf. Figure 5) is an underspecified 'mother' construction with three more specific 'daughters': the Direct RC (corresponding to Goldberg's central sense A, cf. Figure 4), the Intended RC (corresponding to Goldberg's sense F) and the Modal RC (corresponding to the four remaining senses B, C, D and E). Although Kay (2005: 72) agrees with Goldberg that "RC sentences produce systematically different sets of entailments depending on the semantic class of the verb", he stresses the importance of making a qualitative difference between the underspecified mother construction and the further specified 'daughter' constructions. In this way, Kay draws on the semantics/pragmatics distinction in a way that is more rigorous than in Goldberg's approach. He pays attention to the valency of the verb and to the difference between real arguments, added arguments and adjuncts ((Kay 2005: 72)).

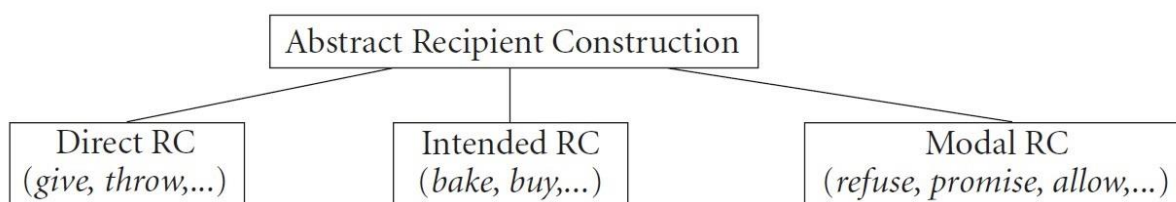


Figure 5 Kay's Abstract Recipient Construction (2005: 78)

As was already mentioned, Goldberg (1995: 91) distinguishes S(emantically)-synonymous from P(ragmatically)-synonymous constructions. She posits with respect to the Ditransitive Construction and the extension of the Caused Motion Construction, more specifically the Transfer Caused Motion Construction, that "by Corollary A of the Principle of No Synonymy, the two constructions must not be P-synonymous". This means that there exists a pragmatic difference between the Ditransitive Construction and the Transfer Caused Motion Construction, which Goldberg, following Erteschik-Shir (1979), attributes to a difference in focus (Goldberg 1995: 92). According to Goldberg, the

two constructions “are semantically the same in designating ‘X CAUSES Y TO RECEIVE Z’” but they “do differ in whether the recipient argument role of the construction is profiled or not – whether it is expressed by a direct grammatical function” (Goldberg 1995: 234). Goldberg (2002: 347) adapts the notation of the Ditransitive Construction by explicitly adding an information structure row ($\text{rec}_{\text{topicality}} > \text{theme}_{\text{topicality}}$) which indicates that “the recipient argument should be more topical than the theme argument” (Goldberg 2002: 348), viz. in the Ditransitive Construction *John gave <Mary> [an apple]* the THEME is considered to be in focus while the RECIPIENT is the topic of the sentence. Since Erteschik-Shir’s study of discourse constraints, many scholars have investigated the various information-structural factors that may influence the alternation (e.g., Bresnan et al. 2007; Theijssen 2012; De Cuypere and Verbeke 2013 among others).

Whereas Goldberg, in her discussion of the DOC and its prepositional paraphrase (1995: 91), considers the Ditransitive Construction and the Transfer Caused Motion Construction as being S-synonymous but not related syntactically (and hence not connected by any motivation link), Perek (2015: 145) also acknowledges that “different constructions may [...] share substantial aspects of their semantics”, but argues for a more explicit account of “argument structure alternations” in CxG. More attention should be paid, he argues, to the alternation itself and to “generalizations of common aspects of meaning shared by formally distinct constructions”. In e.g., Goldberg’s approach insufficient attention is paid to “alternations as grammatical units in their own right”. Perek elaborates on Cappelle’s (2006) proposal to account for constructional alternations in terms of variants of a single construction, so-called ‘allostructions’ of a ‘constructeme’¹⁴. Although the variants are formally different structures, they are assumed to accommodate a common set of lexical items and fulfil similar functions. They represent “different ways to convey the same message” (Perek 2015: 149). Perek (2015: 149), following Cappelle (2006: 3), argues that Construction Grammar should focus more on the relations between independent constructions than on the constructions themselves. With regard to the ‘dative alternation’, Perek assumes that the two variants have meanings that are interchangeable; both express that “an agent initiates the transfer of an object or a message to a recipient”. The two variants are termed ‘allostructions’ because they are “generalizations of a common meaning over several constructions, associated with an underspecified form”. Perek (2015: 151) is particularly interested in the fact that these generalisations are part of the mental grammar of speakers and therefore should be accounted for in a constructionist account.

¹⁴ However, contrary to what Perek (2015: 153) writes, Cappelle did coin the term ‘allostruction’ but he (p.c. 22/01/2020) insists that he did not suggest the term ‘constructeme’.

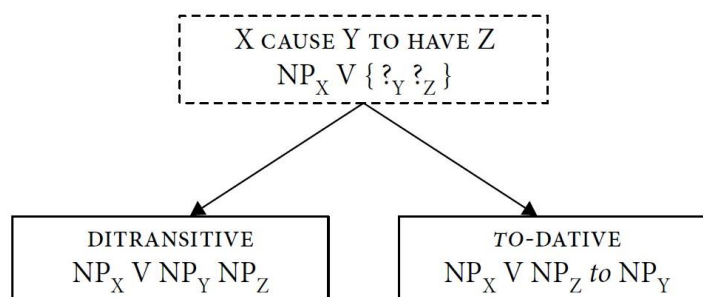


Figure 6 The dative ‘constructeme’ and its ‘allostructions’ according to Perek (2015: 156)

The dashed line of the upper box in Figure 6 symbolises the underspecified (formal) status of the constructeme, which is the higher-level construction (or the generalisation inherited by the allostructions). According to Perek, the constructeme has the meaning ‘X CAUSE Y TO HAVE Z’, but it has an underspecified form, indicated by the question marks. Note that, as is common in Construction Grammar, the RECIPIENT is considered the first object (Y) and the THEME the second object (Z) of the construction, whereas according to Valency Theory the THEME would be the ‘second argument’ and the RECIPIENT the ‘third argument’. The two underspecified forms of the constructeme can either be instantiated as two NPs, resulting in a Ditransitive Construction such as (38), or as a NP and a *to*-PP, resulting in a Transfer Caused Motion Construction such as (39).

(38) *Mary gave John a book.*

(39) *Mary gave a book to John.*

According to Perek, these allostructions can either encode a transfer event in the literal sense, e.g., with *give* as in (38) and (39), or in an abstract sense, e.g., with verbs of communication such as *tell*, but a transfer of ‘possession’ is invariably expressed with all these verbs. However, following Collins (1995), Bresnan et al. (2007) and other corpus-based studies, Perek (2015: 146) acknowledges that the difference between the two allostructions is not merely a matter of meaning, because other factors, such as discourse accessibility, pronominality, animacy, definiteness and length of RECIPIENT and THEME also have a bearing on the realisation of either of the two variants.

Perek’s approach is usage-based. This means that he subscribes to the view that “the structure and organisation of a speaker’s linguistic knowledge is the product of language use or performance” (Diessel 2017). As a consequence, frequency of occurrence plays an important role next to the fact that speakers have linguistic knowledge about the relation between constructions and their uses, including the usage range of alternations. For certain alternations such as, e.g., the so-called ‘conative’ construction (e.g., *John kicked at the ball* vs. *John kicked the ball*), Perek stresses the importance of lower levels of generalisations given that it is not possible to provide a single abstract overarching meaning for this construction that could account for all its possible instantiations.

Accordingly, and in line with usage-based methodology, he associates grammatical patterns with particular lexical expressions.

CxG is mainly focused on the form and meaning of constructions. However, although constructions are said to have meaning independently of verbs (Goldberg 1995: 24), verb meaning also plays a role in a constructional account. In this respect, it is necessary to recall CxG's allegiance to Fillmore's Frame Semantics (Fillmore 1977, 1982). According to Frame Semantics, verbs evoke a semantic frame that relates the verb to encyclopaedic knowledge ('world and cultural knowledge') needed to understand its meaning and that shows how words are used in actual texts. The Frame Semantic approach adheres to a broad theory of meaning, in which there is no qualitative difference between semantics and pragmatics (cf. also Langacker 1987, 2007). This means that a 'holistic' stance is taken with regard to meaning in which semantic and pragmatic elements are considered on one and the same qualitative level of meaning (i.e., a single-layered approach). This is in contrast to the approach I will put forward in which 'encoded semantics' is distinguished from 'pragmatics' (inferred information, including contextual and world or encyclopaedic knowledge).

Constructionist analyses of German can be found in Fischer and Stefanowitsch (2008); Ziem and Lasch (2013); Boas and Ziem (2018b), among others. However, an analysis of the German ditransitive alternation from a constructionist point of view has, to the best of my knowledge, not yet been carried out. Proost (2015), in her account of the ditransitive alternation in German from the perspective of a Verb Sensitive Approach, integrates a number of constructionist assumptions in her analysis, which I will discuss in Section 1.2.4. Similarly, Welke's (2019) approach combines Valency Theory with Construction Grammar and will therefore be discussed in Section 1.2.6 as an exponent of an Integrative Approach.

1.2.4 The Verb Sensitive Approach

Whereas Goldberg, Cappelle, Perek, among others, favour a Constructionist Approach to argument structures and emphasise the importance of the meaning of constructions themselves, other scholars continue to put emphasis on the role of the verb. Of primary importance in this regard is the so-called Verb Sensitive Approach advocated by Rappaport Hovav and Levin (2008). According to these authors, argument realisation predominantly depends on the semantics of the individual verb or the verb class to which a verb belongs. With regard to English dative verbs, Rappaport Hovav and Levin (2008) challenge Goldberg's 'uniform multiple meaning' view according to which the Caused Possession meaning is realised by DOC and the Caused Motion meaning by the prepositional paraphrase (the "to-variant" or POC). They argue that the verb *give* always has the Caused Possession meaning, no matter whether it is used in DOC or POC. By

contrast, the verb *send* is said to have a Caused Possession meaning in the DOC variant and both meanings (Caused Possession AND Caused Motion) in the POC variant. According to their account, Caused Motion and Caused Possession are not in complementary distribution, and it is the verb's own meaning that determines the argument realisation options.

Regarding verbs like *give*, Rappaport Hovav and Levin (2008) argue that the reason why they always express Caused Possession or 'change of possession' is that the semantic structure of these verbs lacks a conceptual PATH feature. Their Caused Possession meaning should be paraphrased as "bringing about of a 'have'-relation", so that possession can be interpreted in its broadest sense (cf. Beavers 2011). Conversely, *send*-type verbs¹⁵, although they lexicalise Caused Motion in the root, can be compatible with two different event schemas. *Send*-type verbs (and *throw*-type verbs, which however are not subject of this study) entail a change of location, but no change of possession (Rappaport-Hovav and Levin 2008: 135).

Not only does Rappaport-Hovav and Levin's account remind us of the projectionist approach which has long been popular in German linguistics and which is discussed in Section 1.2.2, but it also opens the way to an analysis of argument structure variation that does not subscribe to CxG's guiding principle that it is "constructions all the way down" (Goldberg 2003: 223). While the primacy of the construction entails that the verb has a secondary role, I will maintain that for a coherent account of the alternation under study, it is necessary to pay equal attention to the verb and the construction and to focus on the interaction between both without positing the dominance of either of the two (cf. Section 1.2.6).

While Rappaport-Hovav and Levin mainly focus on English, Adler (2011) provides a fine-grained analysis of the semantic and syntactic factors that govern the constructional variation between IOC and POC in German distinguishing five different verb classes. She discusses verbs such as *geben* 'give', *verkaufen* 'sell', *schicken* 'send', *werfen* 'throw' and *stehlen* 'steal', and partly also *bringen* 'bring'¹⁶, which can be used both in IOC and POC (in particular with *zu*, *von*, and *an*), but also particle verbs of transfer such as *zuwerfen*.

Adler's analysis aims at challenging the view that assigns a Caused Possession interpretation to all IOC instantiations and a Caused Motion interpretation to all POC

¹⁵ Rappaport-Hovav and Levin use Levin's verb classes (Levin 1993) in which *give*, together with *hand*, *lend*, *loan*, *pass*, *rent*, *sell*, ..., belongs to the class of "Verbs that inherently signify acts of giving". *Send*-type verbs or "Verbs of sending" are e.g., *forward*, *mail*, *send*, *ship* and *throw*-type verbs or "Verbs of instantaneous causation of ballistic motion" are *fling*, *flip*, *kick*, *lob*, *slap*, *shoot*, *throw*, *toss*, ... (cf. Section 2.2).

¹⁶ Adler (2011: 22, 189) considers *schenken*, *lassen*, *überlassen*, *reichen* and *widmen* to be *geben*-type verbs; *senden*, *faxen*, *mailen*, *funken* as *schicken*-type verbs and *überweisen*, *vermieten*, *vererben*, *abgeben*, *übergeben*, *weiterleiten*, *verschenken* as *verkaufen*-type verbs. Less relevant for my research, *schleudern*, *kicken*, *stoßen* and *schießen* belong to the *werfen*-type class. She also distinguishes the *stehlen*-type class (*nehmen*, *entwenden*, *rauben*) and the *bringen*-type class but provides no further German examples for the latter.

instantiations (as maintained, e.g., in CxG). For this challenge, Adler adopts Rappaport-Hovav and Levin's (2008) Verb Sensitive Approach. She argues that *geben*-type verbs and *verkaufen*-type verbs only lexicalise Caused Possession, the former 'change of possession', the latter 'transfer of possession'. In her words, this means that "the third participant, the RECIPIENT, is lexicalised in the semantics of the verb" (Adler 2011: 191). Conversely, *schicken*-type verbs lexicalise a 'change of location' but are also compatible with Caused Possession. Importantly, Adler (2011: 249) notices that an analysis of the alternation can only be fruitful if all the semantic components are taken into consideration. She not only points to the semantics of the verb, but also to the semantics of the THEME argument and the kind of participation of the third argument. Her five classes all combine with specific argument realisation options. Following Wegener (1985) and in line with the Verb Sensitive Approach, Adler thus maintains that with regard to POCs it is not only the semantics of the verbs but also the joint semantics of the verb and the Direct Object (DO) that may determine the use of a Prepositional Phrase (PP) (Adler 2011: 252). In Adler's model, the Direct Object plays a role in determining which prepositional variant is warranted with certain verbs possessing a somewhat vague meaning. Whereas certain verbs have a sufficiently 'complete' meaning (e.g., *verkaufen*), other verbs need the THEME argument to contribute to the event meaning (e.g., *verleihen*) (Adler 2011: 73). As a 'light verb', *geben* is considered to be very underspecified. It therefore is said to contribute very little itself to the meaning of the verb phrase, except that it expresses Caused Possession and opens three argument slots. Therefore, the preposition, the THEME and maybe also the third argument are needed to determine the exact meaning of a sentence. In sum, preposition selection may either solely depend on the verb meaning (if it is sufficiently 'complete') or on the joint semantics of verb and object.

According to Adler (2011: 26), *zu* always expresses 'change of location' because it is a spatial preposition, and thus sensitive to a spatial semantic component.¹⁷ Adler argues that neither the bare dative nor the preposition *an* express 'change of location', because they – in contrast to the preposition *zu* – have a possessional semantic component. For her analysis of the alternation, Adler (2011: 26) therefore considers it necessary to separate the semantic concepts of possession and location. A RECIPIENT interpretation is only possible when the third argument is animate. This explains why neither the bare dative nor the preposition *an* mark 'change of location' when they occur in the ditransitive alternation, even though in other environments, *an* can be used directionally (Adler 2011: 26). According to Adler (2011: 56-57), the fact that *an* in its basic spatial

¹⁷ However, Adler (2011: 44-47) explains that "it often gives rise to a possessive interpretation when the goal is a human being", because it is "felicitous with human beings when interpreted as spatial goals" and "the vicinity of an animate being is understood as the region over which the person has control". Importantly, she calls the possessive interpretation of *zu* + animate a conventional implicature which is said to be "almost effectively non-defeasible".

(locative) meaning rarely occurs with animate beings, creates a semantic gap, which is filled by a specific ‘addressee-*an*’. With this term Adler refers to a separate meaning facet of the preposition *an* that is related to the basic locative *an*, but with a possessive interpretation, which entails the loss of its original spatial semantics (Adler 2011: 60) (cf. *Er verkaufte das Haus an einen Kunden* ‘He sold the house to a customer’). Adler’s observation tallies with Wegener (1985: 227), who admits that *an* has virtually lost its spatial meaning.

Following Beavers (2011), Adler proposes a scalar approach in order to capture the differing semantics of the prepositions *an* and *zu* (Adler 2011: 84). In her view, “*geben*-type verbs and *verkaufen*-type verbs lexicalise a two-value scale in the dimension of possession” (Adler 2011: 88, 91), whereas “*schicken*-type verbs are associated with a multi-value scale in the dimension of location”. She moreover postulates a spatial path element in *schicken* events, but not in *geben* and *verkaufen* events. Consequently, verbs that exclusively entail Caused Possession only allow *an*-POC, according to Adler. As the preposition *zu* requires spatial motion, it follows that Caused Possession verbs do not allow *zu*-POC.

Adler’s analysis of the dative case boils down to the observation that the inherent meaning of the dative case corresponds to EXPERIENCER (Adler 2011: 93)¹⁸. In general, the dative allows for more roles than Prepositional Phrases, including, e.g., external possessor dative (“Pertinenzdativ”, e.g., *Die Mutter wusch der Tochter die Blusen* ‘The mother washed the daughter’s blouses’), the judger dative (*dativus iudicantis*), e.g., *Das Thema ist mir wichtig* ‘The subject is important for me’ (examples from Adler (2011: 97)), etc. As these roles do not alternate with PPs with *an* or *zu*, I will not further consider them here. More importantly, Adler devotes a section to the Animacy Constraint, which has since long been associated with the dative. According to Adler, Wegener’s (1985: 183) claim that the dative has the feature /+animate/ is too strong and therefore not tenable. Adler (2011: 118) adduces examples with inanimate datives that are neither perceived as personifications nor as metonymic interpretations such as *Sie gaben dem Haus einen Namen* ‘They gave the house a name’, *der Geschichte eine Überschrift geben* ‘to give the story a title’. Similar examples are attested with *verleihen*, which is another verb with little semantic information of its own, e.g., *dem Fest eine mittelalterliche Stimmung verleihen* ‘to give the festival a middle-age atmosphere’.¹⁹ However, important for my discussion, Adler (2011:

¹⁸ However, according to Adler, it would be incorrect to state that all dative phrases are EXPERIENCERS. She also recognises that inanimate datives cannot experience anything.

¹⁹ It must be pointed out, however, that Wegener (1985: 289-293) herself qualifies her claim, albeit ambiguously. On the one hand, Wegener writes that the Animacy Constraint on the dative case is “eine Präferenz-Regel” ‘a preference rule’, rather than a strict grammatical rule. However, because animate NPs predominantly occur in the dative, it is on the other hand legitimate to speak not only of a preference, but also of a rule. Wegener also provides counterexamples to the Animacy Constraint, which in her view depend on the semantic class of verb (e.g., transaction verbs, transformation verbs cf. section 1.2.1) and on the dative NP (i.e., *Tote* ‘the dead’, *Pflanzen* ‘plants’, *Mobile* ‘vehicles’, *Abstracta* and *Concreta*). *Sie gibt dem Buch einen Titel* ‘She gives the book a title’ is among

112) recognises that there is an “undeniable tendency of the dative case to correlate with animate arguments” and she concludes that “the dative case is not a case of animates, but still strongly associated with animacy” (Adler 2011: 150).

In order to explain both EXPERIENCER and non-EXPERIENCER datives, Adler (2011: 110) assumes that a HAVE-relation (cf. Rappaport-Hovav and Levin 2008) underpins the Animacy Constraint. The argument runs as follows: Following Pylkkänen (2002), Adler (2011: 94) claims that an analysis in terms of ‘havers’ can either be entity-related or event-related. In the first case, the HAVE-relation between the ‘haver’ and the THEME is established based on the semantics of the verb and the other arguments (representing a sentence in which the dative is an argument required by the valency of the verb). By contrast, event-related datives do not have such an entailment but they still allow the inference of a HAVE-relation, usually resulting in datives such as BENEFICIARIES, EXTERNAL POSSESSORS, etc., based on a HAVE-relation between the ‘haver’ and the event.

Whereas the above observations concern dative NPs in general, Adler (2011: 150) also devotes a separate section to the dative NP with transfer verbs, which has the role of RECIPIENT. She contends that this role is semantically determined by the verb itself with *geben*-type and *verkaufen*-type verbs. She does not agree with the view that IOC with transfer verbs is slowly disappearing in favour of POC (e.g., Moser 1970; Wegener 1985) and considers the dative to be stable and productive with transfer verbs in present-day German. However, Adler’s account is somewhat blurred because she considers *geben*-type verbs to be by definition ungrammatical with POC (Adler 2011: 13, 68, 82, 150, 192 etc.) in light of her assumption that “no preposition seems to be able to encode the pure ‘haver’ of a HAVE-relation” (Adler 2011: 151). Conversely, with *verkaufen*-type, *schicken*-type (and *stehlen*-type) verbs, additional semantic components these verbs contain are said to make both IOC and POC possible. Moreover, Adler acknowledges that with *schicken*-type verbs the dative can be ambiguous, because it can simultaneously be a RECIPIENT and a BENEFICIARY, and even a *dativus iudicantis* (cf. *Oli schickte ihr den Brief nach London* ‘Oli sent the letter to London to her/for her/to her great joy’). Adler also offers an explanation for the finding that with *schicken*-type verbs only POC seems to be possible when the third argument is a mail box, an address or an electronic receiver. In these cases, Adler argues, the RECIPIENT is not able to experience the event and can hence not be expressed in the dative (Adler 2011: 153).

Wegener’s own counterexamples. It is possible, according to Wegener, to explain the exceptions in terms of figurative language: “Die Ausnahmen von dieser Regel erklären sich als Übertragung des Belebtheitsmerkmals auf andere NPs”. However, Wegener concedes that in contemporary German this uniform picture may to some extent be blurred by weak verbs: almost any NP in the dative can be combined with weak verbs (e.g., *dem Haus seinen Charme, dem Fahrrad einen Stoß geben* ‘give the house its charm, give the bicycle a push’), so that the conclusion must be that the originally explicit semantics of the German dative case might be changing over time.

With respect to the morphosyntactically motivated alternation observed with *geben*-type and *verkaufen*-type verbs, Adler (2011: 197) provides three explanations. First of all, POC shows greater syntactic flexibility. This argument was already presented by Starke (1970a: I: 32; V: 588) and raised again by Wegener (1985: 222,232), who also points out that POC has “mehr syntaktische Möglichkeiten” (see Section 1.2.1). Secondly, POC has greater semantic transparency than IOC. This argument too was already discussed by Starke (1970b: IV: 243) and subsequently by Matzel (1976: 145; 176; 180-182), who associated POC with a “Streben nach Verdeutlichung” (cf. Section 1.2.1: an increasing desire of speakers for more transparency in speech). Finally, referring to Sekerina’s (2003) overview of psycholinguistic studies on the topic of scrambling and processing, Adler (2011: 209) maintains that ‘canonical’ word orders are more easily processable, so that language users prefer the ‘canonical’ order with the dative variant over the scrambled *an*-variant. If the *an*-variant was chosen by her informants, it always had the base order variant, i.e., THEME-RECIPIENT word order (e.g., *Er verkauft das Buch an seinen Freund* ‘he sells the book to his friend’). Also regarding constituent order, Adler interprets the case marking possibilities of German as an advantage over English, which needs a different construction “to provide a reversed order of theme and recipient” (Adler 2011: 25). However, this only seems to apply to *geben*-type verbs, because with *schicken*-type verbs “the *an*-variant may behave like the English *to*-construction”.

Contrary to the *geben*- and *verkaufen*-type verbs, *schicken*-type verbs (as well as *werfen*-type and *bringen*-type verbs) are in the first place directional because they typically include spatial change, according to Adler (2011: 212). They are therefore said to lexicalise Caused Motion. However, when the THEME is something that can change possession and the goal is animate and able to receive something, then these verbs can also express Caused Possession, whereby the goal becomes a RECIPIENT. When *schicken*-type verbs occur with the preposition *zu*, the Caused Possession event also includes Caused Motion, according to Adler.

In sum, not only the event schemata of the verbs (Caused Possession or Caused Motion), but also the semantics of the THEME argument and the kind of participation (EXPERIENCER role) of the third argument play a role in the alternation. Importantly, according to Adler, it is the semantics of the verbal root that indicates whether the variants differ in meaning or not. Adler clearly sees meaning differences in *schicken*-type verbs, whereas all *geben*-type and *verkaufen*-type verbs have the same Caused Possession meaning, independent of the construction they appear in (recall that according to Adler’s analysis *geben* is ungrammatical in POC). However, the realisation of either variant can also depend on discourse structure and syntactic preferences.

Although she does not ignore syntactic preferences and acknowledges that information-structural aspects may play a role in the alternation, it bears pointing out that Adler’s study is only to a limited extent based on naturally occurring data. Moreover, apart from a few Google counts (Adler 2011: 210, 246-247), she does not provide

quantitative analyses (Adler 2011: 30). The present study instead analyses a representative set of corpus sentences with a range of trivalent verbs with regard to a large number of factors that potentially motivate the alternation between IOC and POC. Moreover, because the dataset is considerable and the factors applied in the annotation of the data numerous, statistical analyses will be performed as well.

To conclude this section on the Verb Sensitive Approach, I briefly turn to Proost (2015). Proost challenges the Verb Sensitive Approach proposed by Rappaport Hovav and Levin (2008) by testing the ‘successful transfer’ inference and the presence/absence of a PATH argument with different German verbs of transfer. Proost concludes that the meaning of ditransitive argument structures not only depends on the interaction of the verb with the construction, but also on the lexical semantics of the PP, in particular as regards the difference between animate and inanimate RECIPIENTS and the interaction of the preposition with the animacy of the third argument. According to Proost (2015: 14), a sentence such as *Er faxt die Nachricht an seinen/zum seinem Kollegen* ‘He faxes the message to his colleague’ can alternate with *Er faxt seinem Kollegen die Nachricht*, but IOC is ungrammatical if the RECIPIENT is inanimate (e.g., *Postadresse* ‘mailing address’) because in that case no Caused Possession interpretation is possible. In Chapter 4 we will see that corpus data are not consistent with this claim. IOC also occurs with inanimate RECIPIENTS. I will therefore provide an alternative account of IOC, which is not based on the primacy of a Caused Possession interpretation.

Specifically regarding the verb *geben*, Proost (2015: 2) makes the interesting observation that POC is occasionally possible but infrequent, with an estimated frequency of 1 POC to 99 IOC in a random sample drawn from DeReKo. This is the only quantitative observation regarding the data in Proost’s account.

Finally, note that, in their discussion whether German *send*-type verbs lexicalise Caused Motion or Caused Possession, Levin and Rappaport-Hovav (2011) claim that IOC is not possible with inanimate RECIPIENTS. However, they only provide examples of sentences in which the verb *schicken* occurs with IOC and *zu*-POC, but they disregard the verb *senden* as well as POC with *an*. In the corpus analysis in Chapter 4, I will show that there is substantial counterevidence against Levin and Rappaport-Hovav’s claim, if sentences with *senden* and *an*-POC are duly taken into account.

1.2.5 The Probabilistic Approach

The probabilistic grammar framework assumes that speakers have specific preferences for the use of certain lexical items in syntactic structures and that these preferences are part of their linguistic competence, broadly construed. By conducting quantitative empirical enquiries such as corpus studies and investigations based on grammaticality

judgement tasks, the Probabilistic Approach (PA) aims to uncover these preferences. In the same vein, the Probabilistic Approach uses quantitative analyses with the aim to determine the factors that constrain the realisation of e.g., alternating constructions. In accordance with the definition of grammar as “the cognitive organization of one’s experience with language” (Bybee 2006: 711), it is assumed that there are cognitive factors that lead language users to prefer one alternant over the other in specific contexts of use.

Bresnan et al.’s (2007) Probabilistic Approach to variation in language offers a method to approach alternations in a way that differs from the approaches I discussed so far in one particular respect. Instead of accounting for the ‘dative alternation’ primarily in terms of meaning, Bresnan and her collaborators set out to “predict” the alternation by applying an informational theory of the ‘dative alternation’, which assigns the realisation of either form of the ‘dative alternation’ (DOC or POC) to the simultaneous operation of a number of factors. Their method calculates the expected value of variables, and can more or less successfully predict whether DOC or POC is realised when all variables are taken into account. Following earlier corpus studies on dative syntax, e.g., Thompson (1990), Collins (1995), Gries (2003b), Snyder (2003), the Probabilistic Approach focuses on various properties of the RECIPIENT and THEME arguments such as relative length, pronominality, definiteness and animacy, but also discourse accessibility, with the aim to model the variability using statistical techniques. Bresnan et al. (2007) find Harmonic Alignment effects (cf. Aissen (1999); (2003)), according to which – other factors being equal – “animate, definite, pronominal, discourse-accessible, and shorter arguments tend to precede inanimate, indefinite, nonpronominal, less discourse-accessible or longer arguments” (cf. Bresnan and Ford 2010: 181). Moreover, based on a comparison of DOC and POC in American and Australian varieties of English, Bresnan and Ford (2010: 172) conclude that “the differences in the two constructions are preferences, not categorical regularities”.

Bresnan and her collaborators were not the first ones to hint at Harmonic Alignment. Probably the earliest multifactorial study of the ‘dative alternation’ in English using quantitative modelling of corpus data is Gries (2003b). The study is couched in a constructional framework and identifies the prototypical instances of both DOC and POC based on corpus data by means of a quantitative method termed linear discriminant analysis (LDA). Although the main interest of the study is speaker’s choice, Gries (2003b: 19) identifies approximately the same variables as Bresnan et al. (2007) as having the highest discriminatory power to predict the alternation.

Recently, probabilistic statistical classification models have been further developed in usage-based approaches that examine the question whether the corpus-based models also reflect human behaviour. Klavan and Divjak (2016) investigate how the performance of statistical models can be compared to the performance of native speakers. Among other things, they investigate whether the studies of Bresnan’s group on the ‘dative alternation’ (Bresnan (2007), Bresnan et al. (2007), Bresnan and Ford (2010) Ford and

Bresnan (2013)) reflect the implicit knowledge of English language users, i.e., the so-called speaker's choice between the dative NP and the PP. Klavan and Divjak (2016: 14) confirm that the method Bresnan and her collaborators use to analyse the English 'dative alternation' is appropriate and that it proves the cognitive plausibility of the corpus data because it demonstrates that "the subjects' scores pertaining to of the naturalness of the alternative syntactic structures correlate very well with the corpus probabilities" (Bresnan 2007: 84).

In my own approach I will adopt Bresnan et al.'s (2007) 14 predictor variables to German, but I will add a number of variables and I will not only annotate the data for the second, THEME-like, and third, RECIPIENT-like, argument but also for the first, AGENT-like, argument. Apart from the 12 variables that strictly apply to THEME or RECIPIENT, Bresnan et al. (2007) also include the variables "semantic class of the verb" and "structural parallelism". Structural parallelism – cf. "syntactic persistence" (Bock 1986; Pickering et al. 2002) or "syntactic priming" (Gries 2005; Szmrecsanyi 2006) – is a factor that indicates whether the same construction was used in the previous context, which is expected to influence its use in subsequent discourse. However, given that it is difficult to annotate this potential factor in my corpus, which mainly consists of newspaper articles (for example, when the token is the first sentence of an article without any preceding context), I decided not to take into account the "structural parallelism" variable.

Because German is a case language and does not rely on positioning the arguments in a certain constituent order to the same extent as English (Ágel and Fischer 2010: 237-238), other variables than the ones identified in research of the English alternation might be at play. However, although Bresnan's approach has been proven to be reliable, I do not intend to describe the phenomena observed in the corpus by focusing on speaker's choice, which would require a completely different methodology and overall approach.

1.2.6 Integrative approaches

In search of an approach that integrates aspects of both CxG and Valency Theory, Willems and Coene (2006: 239) and Coene and Willems (2006) focus their attention on the semantics/pragmatics interface and how the complexity of linguistic meaning can best be accommodated. They zoom in on two semantic problems regarding the study of ASCs. The first concerns the alleged functional autonomy of constructions in terms of the 'cognitive' meanings postulated in CxG, the second concerns the relation between verb meaning and constructional meaning as compared to the traditional concept of "Satzbaupläne" in German grammar, which the authors reanalyse as "Satzmuster" 'sentence patterns' (or "Satzmodelle" 'sentence models') with highly schematic form-meaning pairings (cf. Willems and Coene 2003). To this end, Willems and Coene (2006) argue in favour of a unified approach ("Constructional Valency Theory") in which

constructions and valency bearing elements are both assigned semantic functions, albeit of a different kind. Unlike in Goldbergian Constructional Approaches, so-called “Satzmusterbedeutungen” ‘constructional meanings’ are not described in terms of lexical meanings, but in terms of so-called ‘grammatical meanings’ in the vein of Coseriu’s (1987: 91) structural-functional approach, in which different types of meaning are distinguished.²⁰ Willems and Coene reject using lexical descriptions such as ‘CAUSE to RECEIVE’ and ‘CAUSE to MOVE’ to describe the meaning of constructions like DOC and POC in English. They instead argue that constructional meanings combine categorial meanings (of the involved parts of speech, in particular verb and nouns) with instrumental meanings (which underpin the combinatorial rules of syntax), both of which are however to be distinguished from lexical meanings of words and lexical morphemes. By contrast, the construction meanings proposed in Goldberg’s constructional account are said to pertain not to the domain of “Bedeutung” (language-specific encoded meaning), but to the domain of “Bezeichnung” (non-language-specific, non-encoded ‘designation’). The latter domain encompasses all knowledge of the extralinguistic world (‘encyclopaedic knowledge’) that may bear on language use (Coseriu 1975 [1962], 2007). However, insofar as language use is to a great extent conventionalised, different aspects of encyclopaedic knowledge are part of the the content of what Coseriu calls ‘normal language use’ (Coseriu 1975 [1962]). Thus, in actual discourse the schematic meanings of sentence patterns merge with conventional knowledge of ‘normal language use’, effectively directing constructional meanings to be pragmatically enriched in view of specific rather than general functions in discourse (Coene and Willems 2006).

Willems and Coene (2006) and Coene and Willems (2006) further maintain that both the verb and the construction have autonomous meanings which should be kept apart in linguistic analysis. In line with Valency Theory, the verb is considered the structural centre of the sentence and to have the same general lexical meaning in each and every construction in which it occurs (Willems and Coene 2006: 267). Semantic variation of the verb in different patterns is accounted for in terms of pragmatic enrichment (G. “Bezeichnung”) and/or different constructional meanings with which the verb meanings merge in particular instances. Under this view, there is no need for a lexical verb meaning

²⁰ Apart from the well-established type of (1) ‘Lexical meaning’, Coseriu (1987: 91) distinguishes four other types of meaning: (2) ‘Categorial meaning’, i.e., meaning that corresponds to a particular part of speech (noun, verb, adjective, etc.), e.g., the meaning that is common to the adjectives *white*, *green*, *red*, and that differs from the meaning common to the nouns *whiteness*, *greenness* and *redness*. (3) ‘Instrumental meaning’, i.e., the meaning of combinatorial procedures and elements such as word order, intonation, affixes and desinences (= inflectional suffixes), but also of typical ‘function words’ such as articles, prepositions and conjunctions. (4) ‘Syntactic meaning’, which combines lexical and/or categorial meaning with instrumental meaning; for example, modes and tenses of verbs (e.g., indicative as opposed to imperative, or the present indicative as opposed to the future indicative), voice (active and passive), etc. (5) ‘Ontological (or ontic) meaning’, i.e., the representational value that derives from differences in syntactic constructions, for example the different values expressed in an affirmative sentence as opposed to a negation, an interrogative sentence, etc. (cf. Willems 2000 for discussion).

on the level of the constructional meaning (“Satzmusterbedeutung”) and the verbal slot of the construction must not not be confused with the intrinsic (quantitative and qualitative) valency of specific lexical verbs. This is possible, according to Willems and Coene, because a sentence pattern or construction (“Satzmuster”) is to be conceived as a member of a paradigm of constructions, a “Satzmusterparadigma”. Such a paradigm is formed by language-specific constructional form-meaning pairings that contrast with one another. This, the authors argue, explains why verbs with different intrinsic valencies can be inserted into one and the same sentence pattern, as long as the constructional meaning and the lexical verb meaning are compatible. Willems and Coene (2006: 267) illustrate their approach by discussing instances of the so-called Resultative Construction in German and English (e.g., *Das unglückliche Mädchen weinte ihr Kissen nass* ‘The unhappy girl cried and wetted her pillow’, *Willy watered the plants flat*) for which they postulate a construction-specific encoded MANNER feature that is associated with the construction but not with the main verb that instantiates the construction.

Attempts at integrating CxG with Valency Theory can also be found in the work of other scholars, e.g., Ágel and Fischer (2010: 235), Welke (2011), Stefanowitsch (2011) and, most recently, Höllein (2019). I do not intend to treat these studies in detail. However, some aspects of the Integrative Approach to which these studies contribute are worth mentioning since they complement the discussion so far in some respects.

Although Ágel and Fischer (2010: 235) favour the Valency Approach, they believe that Valency Theory is open “to concepts developed outside its framework”. In particular, Ágel and Fischer (2010: 242) point out that it is not only the verb that determines its (syntactic and semantic) environment, but that the influence is reciprocal: verbs are also determined by their environment, as different ‘readings’ of the same verb show, compare, e.g., *She realised her plan* ‘make real’ vs. *She realised that her purse was missing* ‘notice’ (cf. also Ágel 2017: Chapter I). Like Willems and Coene (2006: 267), Ágel and Fischer (2010: 242) conclude that the meanings of verbs are often abstract and “verbs have a number of usages that are interconnected through family resemblances” (cf. also Coene 2006; Willems and Coene 2006 who likewise consider cognitive notions such as family resemblances to apply to usages and hence ‘readings’, not language-specific encoded ‘meanings’).

Similar to Ágel and Fischer (2010: 244), Stefanowitsch (2011) also argues for a combination of CxG and Valency Theory. Unlike Coene (2006); Coene and Willems (2006); Willems and Coene (2006), Stefanowitsch does not adhere to a strict distinction between semantics and pragmatics and adopts the holistic concept of meaning that is more common in CxG, viz. encompasses both language-internal semantic content and information-structural clues alongside encyclopaedic world knowledge. However, Stefanowitsch (2011: 381) is not only particularly important for its integration of CxG and Valency Theory, but also for the author’s illuminating discussion of the various

definitions the notion of ‘construction’ has received in CxG. Here, I only deal with the first issue in Stefanowitsch’s article; the problem of the various definitions of ‘construction’ will be dealt with in Chapter 2 “Theoretical prerequisites” (cf. Section 2.5).

According to Stefanowitsch (2011: 381) a full-fledged explanatory model of argument structure alternations should not only be able to account for the creative use of verbs but also explain why certain verbs do not occur in certain constructions. The first challenge is easily met in a CxG account, which provides the theoretical and methodological tools to deal with discrepancies which arise from the fact specific verbs unexpectedly occur in specific argument structures (cf. Section 1.2.3), as e.g., *He lied himself a seat on a flight*. Conversely, the fact that a latinate verb such as *donate* does not occur in DOC is readily explainable under a valency account by excluding this particular pattern in the description of the verb.²¹ Stefanowitsch introduces the notion ‘lexically-bound Argument Structure Construction (ASC)’ in order to combine both the constructionist and the projectionist approaches in the modelling of argument structure and argument structure variation. In his view, the valency of the verb must be interpreted as a lower-level schema containing the arguments and the semantic roles which the verb can express. This schema is situated on a low level of abstraction because it “has not been abstracted away from a particular verb yet” (Stefanowitsch 2011: 383). It is therefore considered a ‘lexically-bound’ ASC. However, a lexically-bound ASC can be inserted into a phrasal construction, i.e., a higher level ASC that is abstracted away from the verbs it may contain and that captures the generalities of a group of formally and semantically similar lexically-bound ASCs. According to Stefanowitsch, adopting a hybrid model that integrates CxG and Valency Theory is to be preferred because both are eventually just two different perspectives on the same set of phenomena. What he proposes is, then, “a network of argument structure constructions of varying degrees of lexical specificity” (Stefanowitsch 2011: 385). This is an interesting attempt to integrate both approaches, but one aspect is arguably still missing: the qualitative meaning difference that these structures display. I will elaborate on this difference in Chapter 3.

An important representative of Valency Theory in his earlier work (Welke 1988, 1989), Welke has in more recent publication attempted to “revise” his theoretical framework so as to incorporate insights of Construction Grammar (cf. in particular Welke 2009b, 2011).

²¹ This ungrammaticality judgement, based on the morphophonological constraint that is said to exist on latinate verbs such as *donate*, *contribute*, *explain*, *transport* etc., has been described, especially in the context of language acquisition, by e.g., Gropen et al. (1989); Ferreira (1996) and is cited and re-cited in many works on the ‘dative alternation’ (e.g., Levin 1993; Krifka 1999; Groefsema 2001; Bresnan and Nikitina 2003; Coleman 2006). However, a Google search of English sources reveals that “donate them money”, “donate him money”, “donate me some money”, “donate the man some money” are attested. This proves that corpus analysis is to be preferred to introspective research, even though Goldberg (2019: 41) still calls the finding in the COCA corpus that *guarantee* prefers DOC despite being (and sounding) latinate, an exception to the exception.

He now acknowledges that verb and construction are interconnected. The rapprochement between Valency Theory and Construction Grammar that Welke envisages is centred around the idea that verbs contain information about possible constructions they occur in, while the construction in turn accommodates information about possible verbs the construction welcomes (cf. Welke 2011: 193). Ideally, the verb and the construction match and a valid instantiation takes place. However, sometimes a verb and a construction do not match, and a verb is inserted into a construction in which it does not belong by virtue of its valency. For example, the verb *backen* ‘to bake’, which is divalent, can be used in the *geben*-construction, which is typically reserved for trivalent verbs. In line with Construction Grammar (cf. Hilpert 2014: 17), Welke (2009b: 100) reasons that the free dative (“freier Dativ”) (*ihr*) in realisations such as *Er buk ihr eine Torte* ‘He baked her a cake’ looks like an argument and that the verb *backen* is coerced into a construction that is analogous to the *geben*-construction, which entails that the verb has to change its semantics and becomes a *geben* verb, cf. Welke (2011: 195) for an analogous argumentation with the verb *bauen* ‘build’, that is said to be modified in its meaning by the construction. However, in contrast to Construction Grammar, Welke (2011: 10) attributes this change of meaning to an implicature (Grice 1993). He considers the phenomenon to involve what he calls “Konstruktionsvererbung” ‘constructional inheritance’ (2011: 207, 212), which results in a new ad hoc valency (“eine Ad-hoc Valenz”) that is not stored in the lexicon. According to Welke, one should therefore acknowledge the possibility that divalent verbs such as *bauen* eventually become trivalent *geben*-verbs (Welke 2011: 213), but this is a matter of diachrony (cf. Welke 2011: 249). According to Welke, pragmatics is not only an aspect of language use, but also of the language system (cf. Welke 1989: 15). However, Welke does not explain how a verb could “change” its meaning in a construction, a view which is also at odds with Welke’s assumption, based on previous work by Coseriu (1970), that a strict distinction must be observed between ‘significative semantics’ (G. “Bedeutung”) and ‘denotative semantics’ (G. “Bezeichnung”) (Welke 2011: 145-146). I will return to this distinction in Chapter 3 and elaborate on its importance for the present study.

It may be due to this somewhat hybrid stance regarding the semantics/pragmatics interface that Welke occasionally misconstrues explanations provided in the Construction Grammar framework. According to Welke (2011: 197), both the Caused Possession Construction (e.g., *Joe sent Chicago a letter*) and the Caused Motion Construction (*Joe sent a letter to Chicago*) represent Goldberg’s (1995: 55) “Composite Fused Structure: Ditransitive + *send*”. However, as I have explained in Section 1.2.3 it is important to realise that the Caused Motion Construction is *not* a Ditransitive Construction but a Transfer Caused Motion Construction. (The same misinterpretation can be found in Höllein (2019: 50), who heavily relies on Welke (2011)).

Another account that seeks to differentiate in a more coherent way between ‘significant semantics’ (G. “Bedeutung”) and ‘denotative semantics’ (G. “Bezeichnung”) in accordance to the theory of meaning elaborated by Coseriu (1970) is Höllein (2019). Höllein, following Welke (2011), combines Valency Theory and Construction Grammar for his account of the semantic roles in Prepositional Object (PO) constructions such as *Er schreibt an seinen Kollegen* ‘He writes to his colleague’, *Wer denkt an die Kinder?* ‘Who thinks about the children?’ *Frankreich hält sich an Verträge* ‘France complies to treaties’. Although Höllein’s study only concerns POC and does not deal with dative objects, it not only sheds light on the theoretical difference between significant and denotative semantics but indirectly also on the POCs that interest me, as his 17 PO-prepositions also include the prepositions *an* and *zu*. Höllein (2019: 8-17) argues against denotative semantics (e.g., Fillmore 1968; Levin and Rappaport Hovav 2005; Croft 2012) because denotative semantics focuses on extra-linguistic entities that are said to be universal (Fillmore’s ‘semantic roles’), whereas encoded meaning (G. “Bedeutung”) is “*einzelnsprachlich*” ‘language-specific’. Following Lerot (1982), who opposes the view that prepositions are semantically empty²², Höllein proposes a number of dynamic ‘significant-semantic roles’ for the POs he investigates. He also organises the POs in so-called ‘significant-semantic niches’ which he defines as clusters of meanings (G. “Bedeutungen”), including PROSPECTUM (*Sie wartet auf die Blumen* ‘She is waiting for the flowers’) ADDRESSATUM (*Er schreibt an seinen Kollegen* ‘He writes to his colleague’), DIREKTIVUM (*Er baut ein Haus auf den Hügel* ‘He builds a house on the hill’) etc. Unlike the “Satzbaupläne” of Valency Theory (cf. Section 1.2.2) which only describe the formal side of sentence patterns according to Höllein (2019: 29-30), Höllein’s “Satzbaupläne” are complex signs with a form and meaning side of their own (he uses the terms “Satzbauplanzeichen” and “Argumentstrukturmuster”).

Höllein’s approach is based on Welke’s version of a prototype semantics (Welke 2011: 14-15). In this model, the prototype is considered “*der Ausgangspunkt einer Kette von Abwandlungen*” ‘the starting point of a chain of modifications’, and not, as usual, the most typical representative of a category (cf. Rosch 1973; Kleiber 1990; Geeraerts 2010). For each PO Höllein (2019: 81) assumes a main niche and a number of additional niches, as illustrated in Figure 7:

²² Contrary to Heringer (1984), who calls these prepositions semantically redundant because they cannot be commuted, Lerot (1982: 265) assigns a meaning to the “*verbregierte Präpositionen*” (= prepositions that are determined by a certain verb, introducing the so called “*Präpositionalobjekte*” ‘Prepositional Objects’) in PO. Compare, e.g., *auf etwas bestehen* ‘insist on’ and *aus etwas bestehen* ‘consist of’, where it is apparent that, although the verbal environment is identical, the preposition influences the semantics of the verb.

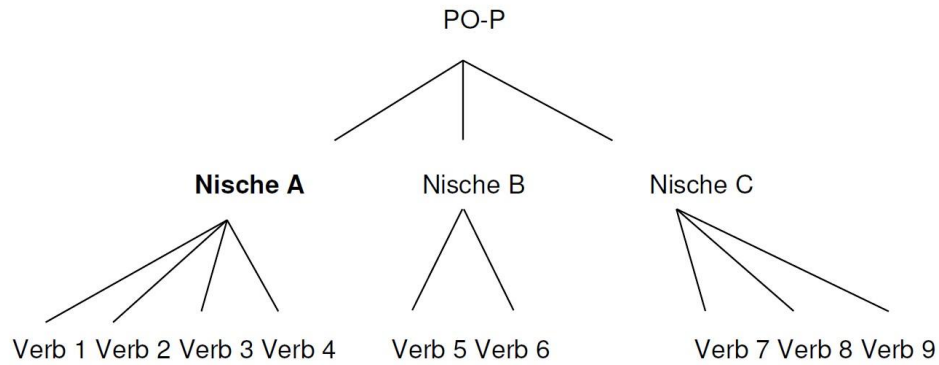


Figure 7 Höllein's niches of a PO-preposition

The first one, Nische A, is characterised as the most frequent and thus as the main niche, Nische B and C as additional niches. However, the number of significative-semantic niches for each preposition is relatively restricted, the maximum being four for the preposition *von* + DAT (cf. Höllein 2019: 287). Specifically, the prepositions that are relevant for this study (i.e., *an* + AKK and *zu* + DAT) only have one significative-semantic niche. According to Höllein (2019: 165), the niche ADRESSATUM ("Zielgröße der Übergabe" 'target of the transfer') is the main niche for the preposition *an* + AKK. Besides monovalent verbs such as *denken* 'think', *glauben* 'believe', also trivalent verbs can instantiate this niche, e.g., *liefern* 'supply', *senden* 'send', *verkaufen* 'sell', among others, e.g., *Er schreibt einen Brief an seine Mutter* 'He writes a letter to his mother'. For the preposition *zu* + DAT, Höllein identifies the niche RESULTATUM ("Ergebnis") as the sole niche, with trivalent verbs such as *zwingen* 'force', *verarbeiten* 'process', *ordnen* 'arrange'. Strikingly, no examples with any verb from my dataset are given, indicating that Höllein interprets sentences such as *Er schickt das Kind zu seiner Großmutter* 'He sends the child to his grandmother' as "Direktiva" 'directional PPs', because both the niche ADRESSATUM and the niche RESULTATUM are analysed as niches that are close to the Direktivum. Höllein (2019: 111), following Ágel (2017) and Welke (2011, 2019), models the Direktivum as "Grenzgänger" 'crosser' between adverbial and object.

Höllein claims to envisage a middle position between a strictly monosemous approach (in the sense of one "Grundbedeutung" which is available in all instantiations, (cf. Coene 2006) and a polysemous approach (which takes several meanings to exist side by side without assuming a basic single meaning) by assuming that there is one main niche that dominates all the uses of a preposition in the POs in which it can be found. At the same time, following Willems (2011b) and Ágel (2015), among others, Höllein acknowledges that there are also niches that cannot be derived from the main niche. It is possible that certain prepositions code more than only one niche and that different but interrelated meanings (G. "Bedeutungen") are created.

Höllein adopts three hierarchical levels with regard to 'meaning', but in contrast to an approach in which "Bedeutung" (on the highest, most general level) is considered

encoded information that underpins all instantiations and hence is indefeasible, Höllein maintains that for the clusters of verbs (cf. Figure 7) “der gemeinsame semantische Nenner darf dabei nicht als Invariante in dem Sinne fehlgedeutet werden, dass alle Verben der Nische das Merkmal in derselben Weise kodieren” ‘the common semantic denominator must not be misinterpreted as an invariant in the sense that all verbs in the niche code the feature in the same way’ (Höllein 2019: 78). Therefore, in line with both Rosch’s and Welke’s prototype semantics, Höllein assumes that there are typical and less typical representatives of the “Nischenbedeutung” (on the intermediary level). An interesting question for my discussion is the question to what level of meaning Höllein’s intermediary level actually belongs, viz. encoded information or inferred information, and what the status of his prototypes is, as the underspecified meaning does not underpin all the niches in his model in the same manner.²³ In other words, do the niches belong to “Bedeutung”, as the denomination ‘significant semantic niches’ suggests, or are they already partial senses or ‘readings’, in which case they belong to the level of ‘normal language use’ (cf. Chapter 3)?

Recently, Welke has adjusted his framework in order to further incorporate insights from Construction Grammar. In his *Konstruktionsgrammatik des Deutschen* Welke (2019) goes on to apply (and if necessary specify and revise) Construction Grammar to German, emphasizing the concept of prototype and integrating various aspects of Goldberg’s theory of ASCs and their multiple instantiations. Like in his earlier work, he endorses an introspective approach to ASCs and intentionally foregoes corpus linguistics. Nevertheless, because he considers his introspective approach to be based on well-established methods of grammar research and because the principles of plausibility, consistency and simplicity are respected, Welke claims that his approach can be called “sprachgebrauchsbezogen” ‘usage-based’ (Welke 2019: 17). In his new attempt at an Integrative Approach, Welke (2019: 229) expressly focuses on the interaction (“Wechselwirkung”) of construction and projection, emphasizing the importance of establishing a distinction between linguistic knowledge and encyclopaedic knowledge (“sprachliches Wissen” and “Weltwissen”), in contrast to the holistic conception of Construction Grammar.

Following, e.g., Ágel and Fischer (2010: 242), Welke (2019: 231) (and cf. Welke 2011: 193) aims to provide a synthesis of Valency Theory and Construction Grammar and states that

²³ Höllein (p.c.) clarifies that the prototypes are encoded information and should be interpreted semantically, more specifically “significatively”, namely “language internally”, without reference to the “Bezeichnung” ‘denotation’.

einerseits Köpfe (Verben) die Konstruktion, in der sie vorkommen können, determinieren, dass aber auch umgekehrt die Konstruktionen die Verben determinieren, die in ihnen vorkommen können.

‘on the one hand verbs determine the construction in which they can occur, but on the other hand, the constructions also determine the verbs that can occur in them.’

However, whereas Ágel (2000) is adamant about the logical primacy of valency, Welke now revises his (2009a) and (2011) analyses of the NOM-DAT-AKK construction so as to give pride of place to constructional aspects, complementing the account with a focus on the semantics of the verbs that are found in the construction (cf. Welke 2019: 292). He now insists that, instead of assuming fixed meanings of verbs in the lexicon with fixed projections in the instantiation of the construction, it is the interaction (“Wechselwirkung”) between generalised verbal argument roles and generalised constructional argument roles that explains how projections can change, how new projections can originate and how coercions arise. In his new analysis, he represents the “geben-Konstruktion” as follows (cf. Figure 8):²⁴



Figure 8 Welke’s representation of the *geben* (type)-construction (2019: 297)

The corresponding semantic description is represented in Figure 9

DO{Ag, [CAUSE (DO(Ag, PROC), BECOME (STATE _{POSS} (Rez, Pat)))]}

Figure 9 Welke’s semantic description of the *geben* construction (2019: 297)

Under this view, verbs project ASCs and contain the necessary information for the projection but constructions also exist independently of verbs in the grammar. In Welke’s view, the interaction between projection and construction can take effect in three ways (Welke 2019: 254):

²⁴ According to Welke (2011: 194), “Nom, Akk, Dativ” designate the formal role features of the construction, “1,2,3” designate the order of the arguments (“perspektivische Rollen”) and “Ag = Agens, Rez = Recipient, Pat = Patiens” designate the (significant) semantic roles. Note that, in line with Construction Grammar, in Welke’s *geben*-construction the dative also includes BENEFICIARIES and MALEFICIARIES.

- [1] the verb's projection and the ASC are in agreement when the construction is filled with lexical material and an instantiation is created, e.g., *Emil gibt Anita ein Buch* 'Emil gives Anita a book';
- [2] possible discrepancies between projection and construction are solved in communication and cognition, when implicatures create a specific "Sinn" 'sense', when the verb is coerced into the construction e.g., *Er backt seiner Mutter einen Kuchen* 'He bakes a cake for his mother' [my example HDV].
- [3] the instantiation is ungrammatical, and the speech act fails because the result is "sinnlos" 'senseless' and/or ungrammatical, e.g., **Er springt seiner Mutter einen Kuchen* 'He jumps his mother a cake' [my example HDV].

Constructions thus adapt to verbs and gradually conform their constructional meaning to novel verbs so that the prototypical constructional meaning (e.g., of the Ditransitive Construction [HDV]) becomes more general (Welke 2019: 254). Similar to his view advanced in Welke (2009), verbs can also be coerced into constructions by way of implicature (e.g., *Emil baut Anita ein Haus* 'Emil builds a house for Anita', in which it is implied that the building of the house entails passing on possession to Anita afterwards) (Welke 2019: 300). Positing the primacy of the construction entails that "Projektionen entstehen aus Konstruktionen und nicht umgekehrt" 'projections arise from constructions and not vice versa' (Welke 2019: 255).

In this study, I will further elaborate on the insights of the Integrative Approach which is directed at an integration of Construction Grammar and Valency Theory. I will also adopt the view that semantic functions encoded in the grammar (valency, case, semantic roles etc.) are subject to interpretations on the basis of pragmatic and encyclopaedic knowledge that goes beyond the meaning that is actually encoded in the grammar. However, I will primarily draw on the insights of Coseriu (Coseriu 1975 [1962], 1987, 1992 [1988], 2001) and subsequent work in the framework of 'Integrational Linguistics' (Dietrich 1997; Willems 1997; Kabatek 2000; Coene 2006; Coene and Willems 2006; Willems and Coene 2006; Van der Gucht et al. 2007; Willems 2011a; De Cuypere 2013; Willems 2016b; Belligh and Willems 2021 among others), whose accounts of the interaction between encoded meaning and inferred meaning strike me as more coherent than Welke's and Höllein's hybrid distinction between 'significative' and 'denotative' semantics.

Unlike the aforementioned approaches, which either consider verb valency as primary and construction as secondary or vice versa, in the present study I adopt the view that 'construction' and 'verb valency' should be treated on an equal footing. I will moreover concentrate on the Coserian distinction between encoded meaning and inferred meaning and on his Three-Layer Approach to language according to which a distinction has to be made between encoded meaning in the language system and default inferences ('normal language use'), on the one hand, and discourse-specific enrichments, on the other. For

the latter distinction, I will additionally draw on the neo-Gricean concept of Generalised Conversational Implicature, which will allow me to locate the alternation between IOC and POC in German with three-place transfer verbs within the semantics/pragmatics interface. Finally, by additionally adopting the methodology of the Probabilistic Approach discussed in Section 1.2.5 and assuming that the alternation is motivated by a potentially large number of factors which reflect preferences in language use, I will conduct my case studies on the basis of extensive corpus data. Working with authentic naturally occurring language instead of (primarily) relying on introspection will hopefully provide a more reliable picture of the alternation. However, the fact that the datasets I will be working with will be stylistically homogeneous, given that they will predominantly consist of newspaper articles, imposes a restriction on this study: it will not be possible to make any claims about possible stylistic differences between IOC and POC. Furthermore, to keep the data manageable, this study is restricted to 17 trivalent verbs of transfer. This is, of course, only a selection of all three-place verbs that exist in the German language.

Chapter 2 Theoretical prerequisites

In this chapter, I introduce the theoretical prerequisites of my study. It is clear from the previous chapter that the terminology I will be using must be explained in sufficient detail, given that there has been considerable variation in terminology in the literature, and some terminological confusion with respect to the alternation that is the subject of the study. A lot of relevant research has been carried out in different frameworks, and the terminology is not always consistent across frameworks. In the following sections, I will define the terminology of the present study against the backdrop of other frameworks. As my approach is based on the assumption that each language should be studied in its own terms with however a view to typological adequacy (cf. Coseriu (1987), Haspelmath (2010, 2012), Willems (2016a), among others), it is my aim to develop a terminology that is both adapted to the ditransitive alternation in German and typologically well-founded. This entails that it is not always possible to simply adopt terms applied to other languages without further qualification. I will focus on a number of conceptual and terminological distinctions and delimit the scope of the most important terms that will be applied in the analysis.

2.1 Preliminary typological clarifications

In English, the alternating constructions known to occur in the so-called ‘dative alternation’ are the Double Object Construction (DOC) and the Prepositional Object Construction with *to*. It is common in the literature to refer to the latter variant as the ‘to-dative’, e.g., Gries and Stefanowitsch (2004), Goldberg (2006: 26), or alternatively the ‘prepositional paraphrase’ (Goldberg 1995: 89) or ‘prepositional dative’, e.g., Oehrle (1976), Bresnan (2007), among others. However, the term ‘dative’ may refer to different concepts. On the one hand, in ‘dative alternation’ the term ‘dative’ refers to the semantic (or thematic) role, commonly understood as “conscious participant or recipient in events

or states” (Givón 1984: 126-127). Thus, in accounts of English, POC is occasionally described as the ‘prepositional dative construction’ (Oehrle 1976: 11), ‘dative PP syntax’ (Bresnan and Nikitina 2003: 14) or the like. On the other hand, ‘dative’ also designates a morphological case, e.g., in case languages such as Greek, Latin, Icelandic and German. To avoid confusion, I will henceforth use the term ‘dative’ exclusively to designate a morphological case, not a semantic role. In German, the dative case is used to case-mark several semantic roles, including RECIPIENT (e.g., *Er gab dem Räuber das Geld* ‘He gave the robber the money’), BENEFICIARY (e.g., *Anna war dem alten Mann behilflich* ‘Anna helped the old man’) (Duden 2006: 825), EXPERIENCER (e.g., *Die Mutter fehlt dem Mädchen* ‘The girl misses her mother’), the EXTERNAL POSSESSOR (e.g., *Er spuckt mir ins Gesicht* ‘He spits in my face’) (Wegener 1985: 88), among other functions. Note, moreover, that POC in German usually concerns the variant with a PP in which the two-way preposition *an* governs the accusative case, not the dative case (by contrast, the PP with the one-way preposition *zu* does govern the dative case).

In the English DOC, both RECIPIENT and THEME are coded like the monotransitive THEME (40). In English, we thus observe what in typological terms is called ‘neutral alignment’ (Haspelmath 2013a, 2015), as in (41):

(40) *He saw [the woman]. He saw [the bottle].*

(41) *He gave <the woman> [the bottle].*

DOC in (41) alternates with the *to*-construction in (42). This POC uses so-called ‘indirective alignment’ with the RECIPIENT introduced by the preposition *to*:

(42) *He gave [the bottle] <to the woman>.*

The terminological distinction between DOC and POC, which is familiar from research on the English ‘dative alternation’ (and similar languages such as Dutch and Swedish) cannot be adopted for the corresponding alternation in German. DOC also exists in German but in German DOC does not alternate with POC and it is rather uncommon in present-day German. It only occurs with a handful of verbs, including *lehren* ‘teach’, *kosten* ‘cost’, *abhören* ‘test (by examining)’ and a few other verbs. Normative grammar states that both objects are coded in the accusative, although some variation can be observed in the case marking of the third participant (cf. Duden 2006: 401-402; 2016: 403; 943- 944) compare (43) - (46):

(43)

<i>Wer</i>	<i>hat</i>	<i><dich></i>	<i>[Mathematik]</i>	<i>gelehrt?</i>
who.NOM	have.PRS.3SG	you.ACC	mathematics.ACC	teach.PTCP

‘Who taught you mathematics?’

(44)

<i>Der Fall</i>	<i>kostete</i>	<i><das Unternehmen></i>	<i>[eine riesige Summe].</i>
the.NOM case	cost.IPFV.3SG	the.ACC.company	a.ACC huge sum

‘The case cost the company a huge sum.’

- (45) *Der Unfall* *kostete* *<einem Kind>* *[das Leben].*
 the.NOM accident cost.IPFV.3SG a.DAT child the.ACC life
 ‘The accident cost the life of a child.’
- (46) *Sie* *hört* *<die Schüler/den Schülern>*
 she. NOM test (by examining).PRS.3SG the.ACC students/ the.DAT students
[die Vokabeln] *ab.*
 the.ACC vocabulary prefix
 ‘She tests the students (by examining them).’

In contrast to English, the two alternants that are the subject of the present study both have ‘indirective alignment’ in German (Haspelmath 2013, 2015). The RECIPIENT is either coded in the dative case, resulting in a Dative Indirect Object Construction (DIOC) (47), (49), (51) and (54), or as a Prepositional Phrase, yielding a Prepositional Indirect Object Construction (PIOC), viz. *an* + accusative, e.g., in sentences with the base verb *geben* (48), the complex verb *zurückgeben* (50), or the base verbs *schicken* (52) and *senden* (55), or *zu* + dative, e.g., in sentences with the base verb *schicken* (53):

- (47) *Der Kassierer* *gab* *<dem Räuber>* *[das Geld aus der Kasse].*
 the.NOM cashier give.IPFV.3SG the.DAT robber the.ACC money from the till
 ‘The cashier gave the robber the money from the till.’
- (48) *Leider* *muss* *sie* *[das schwarze Pulver]* *<an den Bösewicht>*
 unfortunately must.PRS.3SG she.NOM the.ACC black powder to the.ACC villain
geben.
 give.INF
 ‘Unfortunately, she has to give the black powder to the villain.’
- (49) *Die Polizei* *fand* *die Beute* *und* *gab* *[sie]*
 the.NOM police find. IPFV.3SG the.ACC loot and give.IPFV.3SG she.ACC
<dem Eigentümer> *zurück.*
 the.DAT owner back.
 ‘The police found the loot and gave it back to the 36-year-old owner.’
- (50) *Die Schule* *habe* *[die vakante Stelle]* *deshalb* *<an das Ministerium>*
 the.NOM school have.SBJV.3SG the.ACC vacancy therefore to the.ACC ministry
zurückgegeben.
 give back.PTCP
 ‘(It is said that) the school has therefore given back the vacancy to the government department.’

- (51) *Sie schickten <uns> per Fax und E-Mail [ihre Meinung].*
 they.NOM send.IPFV.3PL we.DAT by fax and e-mail their.ACC opinion
 ‘They sent us their opinion by fax and email.’
- (52) *Er sollte [die Gerichtsakten] nicht <an ihr Kloster>*
 he.NOM must.SBJV.3SG the.ACC court records not to her.ACC monastery
schicken.
 send.INF
 ‘He should not send the court records to her monastery.’
- (53) *Man kann ja nicht <zu jedem Taxifahrer>*
 one.NOM can.PRS.3SG yet not to every.DAT taxidriver
[einen Steuerfahnder] schicken.
 a.ACC tax inspector send.INF
 ‘Nevertheless, one cannot send a tax inspector to every taxi driver.’
- (54) *Wir müssen <den Piraten> [ein starkes Signal] aussenden,*
 we.NOM must.PRS.1PL the.DAT pirates a. ACC strong signal send out.INF
dass wir ihre kriminellen Aktivitäten nicht tolerieren werden.
 that we will not tolerate their criminal activities
 ‘We need to send a strong signal to the pirates, that we will not tolerate their criminal activities.’
- (55) *Auch <an die Weißen> sandte er [versöhnliche Signale] aus.*
 also to the.ACC Whites send.IPFV.3SG he.NOM conciliatory signals.ACC out
 ‘He also sent conciliatory signals to the Whites.’

As already explained in the Introduction, I will henceforth use the abbreviation IOC to designate the DIOC and POC to designate the PIOC to avoid confusion.

Another important difference between English and German concerns the prepositions that introduce the Prepositional Phrase in the POC variant. Literature on the English ‘dative alternation’ has mainly focused on the preposition *to*²⁵ in the PP that corresponds to the prepositionless NP in DOC. According to Goldberg (2006: 9), the preposition *for* can be used instead of *to* in a BENEFICIARY reading, compare (56) and (57). However, the assumption that both (56) and (57) can be subsumed under the label ‘ditransitive’ is not without problems (cf. Willems 2020).

²⁵ Although prepositions such as *into*, *onto* and *towards* are marginally attested as well (e.g., throw something into the basket, write something onto the canvas, send someone towards the wall), these are mainly used to designate a DESTINATION.

- (56) *Lisa bought Zach a book.* (DOC)
 (57) *Lisa bought a book for Zach.* (POC)

Compared to English, German has a large number of prepositions that can be used to instantiate the PP in POC. Below, (58) through (62), is an illustration of the variation encountered with the verb *schicken*:

- | | | | |
|------|---|------|------------------------|
| (58) | AUFs <i>Internat schicken</i> | send | to the boarding school |
| (59) | IN <i>den Ostsektor schicken</i> | | to the eastern sector |
| (60) | NACH <i>Amerika schicken</i> | | to America |
| (61) | ZU <i>seiner Oma schicken</i> | | to his grandmother |
| (62) | AN <i>den Dolmetscher schicken</i> | | to the translator |

The present study only takes into consideration sentences with the prepositions *an* and *zu*. Corpus searches show that sentences with *auf*, *in* and *nach* do not alternate with a dative-marked NP variant and invariably express a DESTINATION. They therefore do not qualify as instances of the ditransitive Argument Structure Construction.

In this study, I prefer to designate the two objects typical of a ditransitive construction according to their typological roles and grammatical relations.²⁶ In the typological literature, the ditransitive construction is described as having an AGENT, a THEME, and a GOAL (Bickel 2011: 402). With regard to ditransitives the category AGENT refers to the most “actor-like argument”, THEME to the “most patient-like” argument and GOAL to the “most goal-like or ground-like” argument if the analysis is started from a set of generalised argument roles that are referenced by specific constructions. The reason why I adopt the term GOAL in particular will become clear as we move along. Suffice it to point out here that GOAL is a particularly convenient label because it aptly covers the underspecification of the role we will be focusing on in the alternation between dative NP and PP. For the sake of clarity, I will not use the terms ‘first object’ and ‘second object’, both common in a number CxG analyses. These terms are useful with regard to a language such as English in which the two alternants co-vary fairly strictly with two constituent orders, but they are liable to cause confusion with regard to German, in which considerable variation in constituent order occurs. In line with Valency Theory (see Section 1.2.2), it will occasionally be useful to refer to the ‘THEME-like argument’ (THEME for short) as ‘second argument’ and to the ‘GOAL-like argument’ (more specifically, ‘RECIPIENT-like argument’ or RECIPIENT for short) as ‘third argument’ (cf. Sections 1.2.1 through 1.2.4 and Section 2.2).

²⁶ Grammatical relations refer to the morphosyntactic properties that relate an argument to a clause. Alternative terms are ‘syntactic function’ or ‘syntactic role’. Grammatical relations are distinguished from semantic (or thematic) roles that hold between arguments and their predicates, rather than between arguments and clauses. An argument can bear as many grammatical relations as it enters constructions in a given syntactic context, and these relations need not be the same across constructions (Bickel 2011: 401).

2.2 The locus of the alternation

The survey of previous research revealed that the alternation can be discussed in terms of

- [1] alternating arguments (i.e., dative vs. Prepositional Phrase),
- [2] semantic differences between verbs,
- [3] differences between predicates involved,
- [4] or, especially in more recent studies, as the result of the semantic differences between two constructions that each fuse with specific, carefully defined groups of verbs.

Not every approach can be exclusively attributed to a single author; some researchers use a combination of approaches in their explanation. In this section I discuss the four approaches in turn.

Alternating arguments. In early studies of the German alternation, which usually take case as their point of departure, the **prepositions** are said to be in competition with the morphological case **dative**. Wilmanns (1909: 660) contends that both ‘constructions’²⁷ are not synonymous and goes on to state that “[d]ie Präposition gibt zunächst nur eine lokale Bestimmung, der Dativ bezeichnet ein engeres, persönliches Verhältnis” ‘the preposition initially only gives a local designation, the dative designates a tighter, personal relationship’. The dative is said to require a participating person, a recipient, whereas the spatial goal/destination has to be expressed by a preposition. The view that the dative is mainly for persons is also predominant with Paul (1919: 380): “Dativ der Person” ‘personal dative’, but Paul also qualifies this view, stating: “es sind [...] vorzugsweise Bezeichnungen für lebende Personen, die in den Dat. treten, doch [...] nicht ausschließlich” ‘it is preferably designations for living persons that are expressed in the dative, but not exclusively’ (Paul 1919: 380). In the same vein, Starke (1970b: 238) describes the alternation as “konkurrierende Konstruktionen” ‘competing constructions’ in which the dative is used to denote (G. “Bezeichnung”) the “Zuwendgröße” (term coined by Glinz 1965: 165), i.e., “die Bezugsrichtung des Geschehens oder Seins” (cf. Erben 1967: 121), i.e., a non-spatial target (which is conceived of as a person) (cf. Section 1.2.1). As such, Starke goes on to say, the dative NP competes with the PP introduced with *an* + AKK.

²⁷ Wilmanns explicitly speaks about constructions, but the term may only refer to the argument in which the dative resp. the Prepositional Phrase occurs.

The claim that the dative expresses the experiencer, a “Zuwendgröße”, or has to be understood as ‘the personal case’, and that Prepositional Phrases are mainly directional has been around for quite a long time and it is certainly not made without reason. However, further on in this study (cf. Section 6.3) we will see that this claim is in need of some further qualifications which show that ‘personal’ is not an encoded feature of the dative, even though it may frequently apply. As will be shown, ‘personal case’ (Caused Possession) and ‘direction’ (Caused Motion) are not always instantiated by IOC and POC in German, respectively, but rather constitute frequent uses.

Semantic differences between verbs. Whereas the aforementioned authors predominantly look at the features of the ‘third argument’ and/or the way in which the ‘third slot’ is filled, other scholars studying the German alternation focus on the **verb**: either they list all the trivalent verbs that show the alternation (e.g., Starke 1970b: 240; Matzel 1976: 157-159), or they focus on the dative and study the alternation in passing (e.g., Wegener 1985). Table 1 shows that Starke’s (1970b) and Matzel’s (1976) classifications of trivalent verbs as ‘transaction verbs’ largely corresponds to Duden (2016: 402, § 534), which is in its turn based on Zifonun et al. (1997). By contrast, Wegener (1985) applies a totally different way of classifying dative verbs, and it is not easy to compare both classifications even schematically. Nevertheless, Wegener’s classes will be discussed below.

Table 1 Verb classes according to Starke, Matzel and Duden²⁸

Starke	Matzel	Duden
		Transaktion
Verben des Eigentumswechsels	Verben des Eigentumswechsels, Verben des Gebens	Verben des Gebens und Zeigens i.w.S. (= im weiteren Sinne) <i>Jmdm. etw. geben, schenken, leihen, überreichen, verleihen, verkaufen, überlassen, zuteilen, zuordnen, vermieten, aufhalsen, aufbürden; jmdm. etw. zeigen, vormachen, demonstrieren, nachweisen, vorspielen, vorsingen</i>
	Verben des Nehmens	Verben des Nehmens i.w.S. <i>jmdm. etw. nehmen, stehlen, rauben, entziehen; jmdm. etw. vorenthalten, verweigern</i>
Verben des Mitteilens	Verben des Kommunizierens	Verben des Mitteilens und Versprechens i.w.S. <i>jmdm. etw. mitteilen, erzählen, anvertrauen, versprechen, erlauben, vorschlagen</i>

²⁸ Translation of the terminology: *Verben des Eigentumswechsels* ‘verbs of change of ownership’, *Verben des Gebens und Zeigens* ‘verbs of giving and showing’, *i.w.S* ‘in a broader sense’, *des Nehmens* ‘of taking’, *des Mitteilens* ‘of informing’, *des Kommunizierens* ‘of communicating’, *des Versprechens* ‘of promising’, *des Verschweigens* ‘of non-disclosure’, *des Verheimlichens* ‘of concealment’, ‘*Untergruppen die in das Muster der Transaktionsverben nicht einpassen*’ ‘subgroups that do not fit into the pattern of transaction verbs’, *transitive Richtungsverben* ‘transitive directional verbs’, *Verben des sich Zuwendens, Zuneigens, Zustrebens, sowie des ... Zufügens, Mitteilens* ‘verbs of turning towards sb./sth., leaning towards sb./sth., aspiring/pursuing sth., as well as ... of adding/causing sth., communicating’.

Verben des Verschweigens	Verben des Verheimlichens i.w.S. <i>jmdm. etw. verschweigen, verheimlichen, verbergen, unterschlagen, verhehlen</i> Untergruppen die in das Muster der Transaktionsverben nicht einpassen <i>jmdm. etw. angewöhnen, abgewöhnen; jmdm. etw. anhören, ansehen; jmdm. etw. verdanken, schulden, glauben, zutrauen; jmdn. jmdm. unterwerfen; jmdn. einer Sache unterziehen, aussetzen</i>
Transitive Richtungsverben (<i>Verben des sich Zuwendens, Zuneigens, Zustrebens, sowie des ... Zufügens, Mitteilens</i>) ²⁹	

Wegener (1985: 263) arranges the trivalent dative verbs into ten different groups.³⁰ Because Wegener takes pains to establish verb classes that can occur with a dative NP, including those verbs that alternate with a Prepositional Phrase, I will discuss her account in some detail.

Different predicates involved. Wegener's 'dative verbs' all describe an action by which a 'having-relation' is either established or annulled, or else not affected at all. In her classification, Wegener focuses on the object transferred (whether it is animate, an inanimate body part ("Pertinenzelement"), abstract or concrete), i.e., for her classification not only the verb but also the object plays a prominent role. Wegener also examines the prior status (t-1) and compares it to the status after the completion of the transfer (t+1). Her criteria for the allocation of a verb to a certain group are [1] whether the RECIPIENT 'has' the THEME after the transfer operation, [2] whether the THEME exists prior to the transfer operation, and [3] whether the THEME is in a better or worse condition after the transfer. The verbs under study here that appear in group 1 "Geben" 'give' (*verleihen, verkaufen, geben, schicken*)³¹ comprise the verbs of *Besitzwechsel* 'change of possession' with the feature /+Transaction, pos./ and, according to Wegener, display a

²⁹ Starke here cites Erben (1967: 121) who lists "*Verben des Sich Zuwendens, Zuneigens, Zustrebens, sowie des Zusagens, Zukommens, Zuteilwerdens oder Zuteilens, Zufügens, Mitteilens, Nehmens*" as 'Richtungsverben' that combine with substantives indicating a "Zuwendgröße". Somewhat strangely Erben and Starke (1970b: 238) here seem to consider the verbs of adding and communicating as directional verbs.

³⁰ Some of the groups (*verbessern* 'improve' and *verschlechtern* 'impair') concern BENEFICIARIES and are not discussed here, nor are possessive datives ("Pertinenzdative") and similar (free) datives because they do not partake in the alternation under study.

³¹ Whereas some accounts, e.g., Rappaport-Hovav and Levin (2008) and Adler (2011), arrange *geben* and *schicken* into different verb classes, Wegener (1985: 264) and Welke (1989: 7) discuss them as part of the same group, viz. "Verben des Besitzwechsels" 'verbs of change of possession', "dreiwertige >geben<-Verben" 'trivalent >geben< verbs'.

dative NP that is a RECIPIENT. Group 2 “Beschaffen” ‘procure’ (*Recht, Schuld, eine Ohrfeige, eine Chance geben* ‘agree with, blame, slap in the face, give a chance’) also features the semantic RECIPIENT role. According to Wegener, the difference between group 1 and 2 lies therein that for the verbs in group 1 the THEME is located with the AGENT, whereas with the verbs in group 2 the THEME is initially ‘somewhere’, and then transferred to the RECIPIENT. The verbs in group 2 also have the feature /+Transaction, pos./. Finally, group 3 “Erschaffen” ‘create’ encompasses actions where the RECIPIENT has the THEME at the end of the transfer process, but before that the THEME did not exist. Therefore, these verbs have the feature /+Production/. Because the other groups do not contain verbs that are part of this study (or because their third argument is a BENEFICIARY OR MALEFICIARY), I do not discuss them any further here.

Interestingly, Wegener (1985: 265) points out that in her system certain verbs can have a double classification, e.g., *einen Kuss geben* can be categorised under both group 1 and group 3 because, before it can be ‘transferred’, the kiss has to be ‘produced’. Similarly, e.g., *schreiben* can occur in group 1 as a verb of communication (*er schreibt ihr, dass er kommt* ‘he writes her that he is coming’), but also in group 3 as verb of production (*er schreibt ihr einen Brief* ‘he writes her a letter’). Wegener also hints at a double interpretation of *er schreibt ihr einen Brief* ‘he writes her a letter’ and *er schreibt ihr einen Brief ans Finanzamt* ‘he writes a letter to the tax office for her’: the dative NP is a RECIPIENT in the first sentence but a BENEFICIARY in the second sentence. Moreover, she remarks that the RECIPIENT-interpretation does not exclusively occur with transaction verbs. She nevertheless contends that the interpretation of the dative as RECIPIENT OR BENEFICIARY is dependent on the verb, more specifically on the predicate, and independent of whether the verb designates a transaction (Wegener 1985: 271).

Apart from the aforementioned general classification of all dative verbs, Wegener also classifies the verbs that partake in the alternation (cf. Section 1.2.1). Wegener’s semantic classification distinguishes verbs of transaction (‘giving’ or ‘taking’ in the broad sense) and verbs of transport (‘removal’ or ‘acquirement of an object’). Typically, this classification focuses on either a RECIPIENT role (for the transaction verbs) or a DESTINATION role (for the transport verbs), in accordance with the aforementioned traditional view that the alternation concerns a semantic difference between ‘having something’ and ‘directing something towards a goal’.

Whereas Wegener’s study mainly focuses on the dative, Höllein (2019) takes the Prepositional Phrase in present-day German as its main subject of inquiry. His account is of special interest because he not only makes detailed observations on Prepositional Phrases, but following Welke (2011), he also distinguishes different levels of meaning which will prove useful for my analysis (cf. Chapter 3). Although Höllein (cf. Section 1.2.6) is not primarily interested in alternations, he touches upon some interesting characteristics of the Prepositional Phrase that relate to the possibility for alternation. As explained in Section 1.2.6., Höllein adopts the notion of semantic niches that code specific

meanings. In his view, the meaning of a semantic niche is carried by a combination of the meanings of the preposition, the case and the verb. According to Höllein (2019: 124), certain niches have been abstracted so far away from their originally spatial meaning that they are no longer analysable as directional. In the minimal pair (63) - (64), for instance, Höllein, following Ágel (2017: 509), identifies sentence (63) as the semantically neutral alternant, whereas (64) is the semantic specific, ‘closed’ alternant. According to Höllein, the fact that these sentences can alternate proves that the *an*-PP in (64) can no longer be interpreted as directional, but belongs to the niche ADRESSATUM.³²

(63) *Er liefert <dem Buchhandler> [die Bücher].*

‘He delivers the books to the bookseller’

(64) *Er liefert [Bücher] <an den Buchhandler>.*

‘He delivers books to the bookseller’

Whereas Wegener locates certain semantic differences in the meanings of the **verb plus the object**, Höllein locates them in the meanings of the **verb, the object and the preposition**. Interestingly, Höllein emphasises that the preposition *an* has lost some of its spatial meaning, a view that is already present in German linguistics since Grimm and Grimm (1845-1961) and that is also shared by Adler (2011: iv) who states that “at least in the context of transfer verbs”, *an* “does not necessarily point to a spatial component of meaning” (Adler 2011: 21). However, Adler’s analysis of the dative as ‘the personal case’ is also reminiscent of the linguistic tradition described above (e.g., Wilmanns (1909: 660) and Wegener 1985). Furthermore, Adler’s analysis follows Rappaport-Hovav and Levin’s (2008) Verb Sensitive Approach, which mainly **focuses on the verb class** (cf. Levin’s verb classification below) as an explanatory factor for the alternation.

Two “semantically”³³ different constructions. Both Rappaport-Hovav and Levin (2008) and Adler (2011) also consider the **construction** in which the verbs can be found. In CxG (cf. Section 1.2.3) and Verb Sensitive Approaches (cf. Section 1.2.4) of the ditransitive alternation in Germanic languages, verbs are commonly sorted out into different verb classes. The classes usually are either inspired by Pinker’s (1989) or Gropen et al.’s (1989: 243-244) classification into nine semantic verb classes (e.g., Vázquez-González and Barðdal 2019 for a diachronic account of Proto-Germanic) or on Levin’s (1993: 45-46)

³² PO-P *an* + accusative forms the niche ADRESSATUM, whereas PO-P *zu* + dative forms the niche RESULTATUM. Höllein (2019) does not reserve a niche for the *zu* + dative forms that could function as ADRESSATUM.

³³ Recall, as explained before in relation to CxG in Section 1.2.3, that in most single-layered accounts semantics and pragmatics are situated on the same qualitative level of meaning. Goldberg (1995: 91-95) assesses DOC and the (Transfer) Caused Motion Construction as “semantically” synonymous but not “pragmatically”, because in her view there is a difference in “information focus”.

English verb classes (e.g., Adler 2011; Proost 2015 for a synchronic account of German). Note that Levin's general aim is to prove that the meaning of a verb determines its syntactic behaviour, whereas Goldberg (1995: 38) focuses on meanings of the Ditransitive Construction (= DOC only), cf. Table 2.

Table 2 Pinker's nine semantic verb classes vs. Levin's alternating verbs and Goldberg's related senses of the Ditransitive Construction

Pinker	Levin	Goldberg
i. Verbs that inherently signify acts of giving e.g., <i>give, pass, hand, sell, pay, trade, lend, loan, serve, feed</i>	a. GIVE VERBS e.g., <i>feed, give, lease, lend, loan, pass, pay, peddle, refund, render, rent, repay, sell, serve, trade</i>	A. Verbs that inherently signify acts of giving e.g., <i>give, pass, hand, serve, feed, ...</i>
ii. Verbs of instantaneous causation of ballistic motion e.g., <i>throw, toss, flip, slap, kick, poke, fling, shoot, blast</i>	h. VERBS OF THROWING e.g., <i>bash, bat, bunt, catapult, chuck, flick, fling, flip, hit, hurl, kick, lob, pass, pitch, punt, shoot, shove, slam, slap, sling, throw, tip, toss</i>	A. Verbs of instantaneous causation of ballistic motion e.g., <i>throw, toss, slap, kick, poke, fling, shoot</i>
iii. Verbs of sending e.g., <i>send, mail, ship</i>	d. SEND VERBS e.g., <i>forward, hand, mail, post, send, ship, slip, smuggle, sneak</i>	
iv. Verbs of continuous causation of accompanied motion e.g., <i>bring, take</i>	c. BRING AND TAKE f. CARRY VERBS e.g., <i>carry, drag, haul, heave, heft, hoist, kick, lug, pull, push, schlep, shove, tote, tow, tug</i>	A. Verbs of continuous causation in a deictically specified direction e.g., <i>bring, take</i>
v. Verbs of future having e.g., <i>offer, promise, bequeath, leave, refer, forward, allocate, guarantee, allot, assign, allow, advance, award, reserve, grant</i>	b. VERBS OF FUTURE HAVING e.g., <i>advance, allocate, allot, assign, award, bequeath, cede, concede, extend, grant, guarantee, issue, leave, offer, owe, promise, vote, will, yield</i>	D. Verbs of future transfer e.g., <i>leave, bequeath, allocate, reserve, grant</i>
vi. Verbs of communicated message e.g., <i>tell, show, ask, teach, pose, write, spin, read, quote, cite</i>	i. VERBS OF TRANSFER OF A MESSAGE e.g., <i>ask, cite, ?pose, preach, quote, read, relay, show, teach, tell, write</i>	
vii. Verbs of instrument of communication e.g., <i>radio, E-mail, telegraph, wire, telephone, netmail, fax</i>	j. VERBS OF INSTRUMENT OF COMMUNICATION e.g., <i>cable, e-mail, fax, modem, netmail, phone, radio, relay, satellite, semaphore, sign, signal, telephone, telecast, telegraph, telex, wire, wireless</i>	
viii. Verbs of creation e.g., <i>bake, make, build, cook, sew, knit, toss, fix, pour</i>		F. Verbs involved in scenes of creation e.g., <i>bake, make, build, cook, sew, knit</i>

ix. Verbs of obtaining e.g., <i>get, buy, find, steal, order, win, earn, grab</i>	F. Verbs of obtaining e.g., <i>get, grab, win, earn</i>
e. SLIDE VERBS e.g., <i>bounce, float, roll, slide</i>	
g. DRIVE VERBS e.g., <i>barge, bus, cart, drive, ferry, fly, row, shuttle, truck, wheel, wire (money)</i>	
	B. Verbs of giving with associated satisfaction conditions e.g., <i>guarantee, promise, owe</i>
	C. Verbs of refusal e.g., <i>refuse, deny</i>
	E Verbs of permission e.g., <i>permit, allow</i>

When the three classifications in Table 2 are compared, some interesting conclusions can be reached. First of all, it emerges that Levin (1993) does not list verbs of creation or obtaining, but adds SLIDE VERBS and DRIVE VERBS, whereas Goldberg (1995: 38) does not include SEND VERBS, nor VERBS OF TRANSFER OF A MESSAGE and VERBS OF INSTRUMENT OF COMMUNICATION in her list. She adds “Verbs of giving with associated satisfaction conditions”, “Verbs of refusal” and “Verbs of permission”. The explanation for this hiatus is that under Goldberg’s account the SEND VERBS are said to instantiate the Caused Motion Construction and hence do not belong to the verbs that instantiate the Ditransitive Construction (in its narrow definition). The contrast that is observed in this analysis of the ditransitive alternation as either expressing possession (in DOC) or expressing motion (in POC) (cf. Section 1.2.3 on CxG) captures the difference between a ‘have’-relation/a personal relation for the dative and a direction/destination for the prepositional realisation, which is adopted in many subsequent accounts.

Secondly, in constructional accounts the verbs appearing in the Ditransitive Construction³⁴ are ordered around a central sense (usually the most concrete “AGENT successfully causes RECIPIENT to receive PATIENT” sense, which is considered prototypical), whereas the other verbs appear as (polysemic) extensions. The Ditransitive Construction is thus conceived of as a polysemous network of related senses with metaphorical extensions (Goldberg 1995: 38), described as a radial network of subsenses (cf. also Coleman 2006: 365). By situating the locus of the alternation in the construction as a whole rather than only in the verb or in the combination of verb and object (or verb,

³⁴ Recall that in most most constructional accounts ‘Ditransitive Construction’ refers to DOC (or IOC) only (cf. Sections 1.2.3 and 2.4).

preposition and object), CxG not only broadens the scope of the alternation, but also expands it from the level of words to the level of argument structures.

Thirdly and interestingly, in the approaches described above, the focus is on **noncomplex** verbs and little is said about how **complex** verbs behave. Some of the complex verbs that are the object of the present study can be allocated to several classes at the same time. Whereas e.g., *weitergeben* ‘pass’, *verkaufen* ‘sell’ qualify as GIVE VERBS and *einschicken*, *einsenden*, *übersenden*, *weeterschicken*, *zurückschicken* and *zurücksenden* as SEND VERBS, *verleihen* ‘give, lend’ qualifies as a GIVE VERB but also as a VERB OF FUTURE HAVING ‘award’. Moreover, some complex verbs in German with the base *-geben* are used to express propositional senses (e.g., *eine Erklärung abgeben* ‘give an explanation’, *ein Urteil abgeben* ‘make a judgement’ and *weitergeben* in the sense of ‘weitererzählen’) if both the verb and the object are taken into account. These uses would rather resort under VERBS OF TRANSFER OF A MESSAGE, whereas some abstract uses of e.g., *preisgeben* such as “überlassen” ‘expose’ cannot, strictly speaking, be subsumed under a specific class. Similar difficulties of allocation are also encountered in other languages. For that reason some researchers expand the list of verb classes (as presented in Table 2) to 15 (cf. Coleman 2006: 314-315 for Dutch) or 17 (cf. Barðdal 2007: 11-13 for Modern Icelandic), while others apply the same verb classes as Levin (1993) (e.g., Adler 2011; Proost 2015) but only study a small group of verbs. In the present study I will take into account a sample of both noncomplex and complex transfer verbs that happen to alternate sufficiently to be amenable to statistical analysis.

2.3 Diathesis

Prior to the establishment of the dataset, it is important to solve the question whether passive sentences have to be included. In CxG, there exists no consensus as to whether passives must be attributed to a separate construction or whether they can be assigned to the same construction as the actives. With regard to diathesis in English, Goldberg (2002: 351) initially suggests a separate but related construction for passives of ditransitives. She argues that, if actives and passives are compared, different linking rules of grammatical functions to roles are at play. She contends that the ditransitive-passive construction is a construction in its own right because its form is not strictly predictable. She goes on to say that in English only the RECIPIENT argument can be passivised (in DOC), in contrast to other languages, where both THEME and RECIPIENT can appear as subjects of

a passive sentence.³⁵ In the same vein, Bernaisch et al. (2014: 14) distinguish four different patterns of ditransitivity (i.e., ditransitive active, prepositional dative active, ditransitive passive, prepositional dative passive) in their analysis of the ‘dative alternation’ in South Asian Englishes. Mukherjee (2005: 93-99) includes passive alternatives for his GIVE-, TELL-, SHOW-, ASK-, SEND- and OFFER-patterns, thus treating voice as part of the dependent variable. Specifically with regard to German in a CxG perspective, Welke (2019: 323-324) argues that passive and active constructions have to be considered as distinct constructions because they not only display formal, but also semantic differences. In this respect, Welke agrees with Ágel (2017: 277), who also identifies active and passive as two “*alternierende autonome strukturen*” ‘alternating autonomous structures’. Others simply ignore passives in their analyses (e.g., Bresnan et al. 2007: 91; Theijssen et al. 2013: 6) and focus exclusively on active sentences.

Following Goldberg, Hens (1995: 104-105) argues that “the participants of ditransitive verbs can be assigned grammatical functions and case according to diathesis”, pointing out that one and the same semantic role can be realised differently qua grammatical function, e.g., the THEME can be Direct Object of an active sentence or subject of a passive sentence. Hens concludes that for CxG “grammatical functions cannot be prelinked to participant roles in the cases where the passive is possible”, and that “receivers in genuinely ditransitive constructions are not pre-linked to grammatical functions or to morphological case”. Hens prefers an approach in which “a constellation of participants” is examined instead of the surface case (for further discussion: see Hens 1995: 114;126). This is also the position that Coleman (2006: 257) takes, although he approaches the issue of diathesis from a prototype point of view: he chooses to represent the syntax of the Dutch DOC by regarding the active variant as the basic, i.e., prototypical form and the passive variant as a formal extension of it.

In the present study, I will follow the alternative approach suggested by Goldberg (2002: 351) “to define the ditransitive³⁶ construction more abstractly”, because in a more general definition of the ditransitive construction there is no need to specify the mapping between the semantic roles and the grammatical functions, nor does the construction need to indicate “that there are two objects overtly realised”. According to Goldberg (2002), this approach was already suggested by Kay (1996) who prefers to capture the generalisations across all (actives and) passives by underspecification rather than by

³⁵ This claim might be in need of some qualification. Goldberg bases her judgement on, inter alia, Polinsky (1998: 405) who shows that passivisation is an effect that gives “superiority” (relative dominance of the two objects in a Double Object Construction) to the RECIPIENT, so that the RECIPIENT in *Mary was given a book by John* is “superior” to the PATIENT. There is an implication relation that stipulates that if a dialect of English allows PATIENTS to be passivised, e.g., *A book was given Mary*, then it certainly also allows RECIPIENTS to be passivised. Speakers of certain dialects of English may occasionally allow PATIENT passives such as *A book was given Mary*.

³⁶ Note that, whereas Goldberg (like Hens 1995, among others) uses the term Ditransitive Construction only to refer to DOC, I use the term to encompass both IOC and POC, in accordance with typology (cf. Malchukov et al. 2007), as described in Section 2.4.

inheritance (cf. Kay 2005: 73). Underspecification here means that the “highly abstract ‘extra object’ construction” (Goldberg 2002: 352) does not specify whether it will be instantiated as an active or a passive sentence. It is my understanding that this approach also meets the condition that a language should be studied in its own terms (cf. Coseriu (1987), Haspelmath (2010, 2012), Willems (2016a), among others). An analysis that takes a general, underspecified construction (i.e., also underspecified as to how the semantic roles are grammatically realised) as its starting point is more appropriate for German because it is a case language in which the passivisation process takes place along different lines as compared to English. In German both the THEME (65), (66), (67) and the RECIPIENT (68) arguments can be passivised, albeit with a different kind of passive structure, whereas in English usually only the RECIPIENT is passivised (*Mary was given a book* versus ?*A book was given Mary*, which, according to Polinsky (1998: 405), is only acceptable in certain dialects).

(65) (a) *Die Lehrerin hatte <den Schülern> [die Aufgabe] zurückgegeben.*

‘The teacher had returned the assignment to the pupils.’ (Duden 2006: 552)

(b) *[Die Aufgabe] war <den Schülern> (von der Lehrerin) zurückgegeben worden.*

‘The assignment had been returned to the pupils (by the teacher)’

(66) *<Den Schülern> wurde [...] [ein interessantes Rahmenprogramm] geboten.*

‘The pupils were offered an interesting supporting program.’ (Google search)

(67) *<Dem Bach> wurde [sein ursprüngliches Bett] zurückgegeben.*

Lit.: ‘The stream was returned to its original bed.’ (Rhein-Zeitung, 04.03.2019)

German has further passivisation possibilities, apart from the *werden*-passive mentioned above. According to Duden (2016: 563), the alternative constructions termed *bekommen*-, *kriegen*- and *erhalten*-passive (also called “Rezipientenpassiv”, “Benefizientenpassiv” or “Dativpassiv”) are commonly used with trivalent verbs, but I will exclude them from this study because they do not alternate; compare (68).

(68) (a) *Ich sagte <der Besatzung> [die Wahrheit].*

‘I told the crew the truth.’ (Duden 2016: 563)

(b) *Die Besatzung bekam (von mir) [die Wahrheit] gesagt.*

‘The crew got the truth (from me).’ (Duden 2016: 563)

(c) **Der Besatzung bekam die Wahrheit gesagt.*

‘The.DAT crew got the truth said.’

(d) **An die Besatzung bekam die Wahrheit gesagt.*

‘To the.ACC crew got the truth said.’

However, German has still another possibility to the *werden*-passive which, in contrast to the *bekommen*-, *kriegen*- and *erhalten*- passive, does alternate: causatives such as (*sich*) *lassen* + infinitive occasionally occur with trivalent verbs. With a verb such as *schicken* these passives usually appear in IOC, e.g., (69), with a reflexive pronoun in the dative and in POC mainly with directional phrases such as *aufs Handy* ‘to your cell phone’, *nach Hause* ‘home’, but also with PPs such as *an die Adresse* ‘to this adress’ and *an den Optiker* ‘to the optician’ (70). However, because of lack of comparable data with other verbs, these passives were not included in my dataset.

(69) *Ich habe <mir> dann [den Bericht] vom DGB schicken lassen.*

‘Then I had the report sent to me by the DGB.’ (Protokoll der Sitzung des Parlaments Landtag des Saarlandes am 23.01.2002)

(70) *Die Patienten möchten [die Brille] dann <an den Optiker> schicken lassen.*

‘The patients would then like to have the glasses sent to the optician.’ (Hannoversche Allgemeine, 10.07.2009)

In summary, in this study I will investigate the ditransitive construction as an Argument Structure Construction that is not dependent on diathesis. Conversely, diathesis (Voice) will be treated as a factor among other grammatical factors, in order to establish whether – and if so, how – the distinction between active and passive has a bearing on the alternation between IOC and POC in present-day German.

2.4 Ditransitivity and the Ditransitivity Hierarchy

The term ‘ditransitive’ can be used in a narrow sense, as in Goldberg (1995, 2006), Croft et al. (2001), Kittilä (2006), Coleman (2009), among others, or broadly, as in Malchukov et al. (2010), Haspelmath (2015) and other typologically informed studies. According to the broad definition, a ditransitive **construction** consists of a trivalent verb, an AGENT-like argument (A), a THEME-like argument (T) and a GOAL or RECIPIENT-like argument (R or G for GOAL, cf. Croft (2001: 147) and Bickel (2011: 403)). For Malchukov et al. (2010: 1), the formal manifestation of the arguments is not decisive in determining whether a construction is ditransitive or not. In the present study I adopt the broad, typologically informed definition of the term ditransitive. As a consequence, while it is common practice with regard to English to equate Ditransitive Construction with DOC, in German both IOC and

POC qualify as ditransitive. I concur with Malchukov et al. (2010: 4) that the ditransitive construction should not be equated with DOC and that a language-independent definition of ditransitive construction, which does not make reference to the formal properties of the RECIPIENT-like argument, is to be preferred. This is in line with the aforementioned guiding principle of this study (see the Introduction to Chapter 2) that I aim to combine a focus on German “in its own terms” with typological adequacy.

The term ditransitive is also often associated with **verbs** that have the potential to occur in a ditransitive construction (whether defined narrowly or broadly, cf. Section 2.5). I discussed the category of ‘ditransitive verbs’ in Section 2.2, albeit mainly using the term ‘trivalent’ to characterise the verb’s valency. In the remainder of this study, I will resort to the term ‘ditransitive’ to refer to the construction and to the term ‘trivalent’ to indicate a verb’s valency (cf. Willems 2020). With regard to trivalent verbs that can occur in the ditransitive construction, it must be recalled that this study only deals with a selection of the verbs discussed in Section 2.2.

Moreover, as explained in Section 2.1, it must be taken into account that the term ‘dative’ refers to different concepts in the literature. For the sake of clarity, throughout this study I use the term ‘ditransitive alternation’ instead of ‘dative alternation’ when addressing the variation between IOC and POC, and the corresponding variable marking of the RECIPIENT-like argument, in German.

According to Croft et al. (2001: 2), there is a hierarchy in the degree of ditransitivity across Germanic languages. They call it the Ditransitivity Hierarchy. This hierarchy basically conveys that the three types of verbs they classify as ‘give’ verbs, ‘send’ verbs and ‘throw’ verbs do not behave identically across these languages: if a language allows for the Ditransitive Construction³⁷ with e.g., ‘throw’, then the construction also occurs with the verbs to the left of the hierarchy in (71):

(71) ‘give’ < ‘send’ < ‘throw’

According to Levin and Rappaport Hovav (2005: 228), the motivation for this hierarchy is of a nonlinguistic nature, because it is “related to how the relevant happenings in the world are construed”. Croft et al. (2001) find that in English all three verbs can occur in both the Ditransitive and in the *to*-Construction. Croft et al. (2001: 16) argue that the nature of the events determines the alternation. In their view, ‘give’-type verbs have a high degree of inherent transfer and are accordingly more likely to be used with DOC and a Caused Possession interpretation than ‘throw’-type verbs, which favour a Prepositional Phrase and a Caused Motion interpretation, whereas ‘send’ type verbs are located in the middle of the hierarchy and can express both Caused Possession and Caused Motion (Croft et al. 2001: 16). This analysis squares with Rappaport-Hovav and Levin’s (2008) claim that

³⁷ Croft et al. (2001) use the term ‘ditransitive’ in the narrow sense, i.e., only applying to DOC.

the syntactic behaviour of transfer verbs can be explained semantically (cf. also Goldberg 1995; Krifka 1999; Goldberg 2003; Adler 2011; Beavers 2011; Levin and Rappaport-Hovav 2011; Proost 2015); compare also Malchukov et al. (2010: 48), who nevertheless add that “the distinctions are gradual and more classes may need to be recognized”.

In accordance with the hierarchy, in German only *geben*, *schicken* and *senden* are attested in IOC and in POC. Note that in German there are two verbs that correspond to the English verb *send* (*schicken* and *senden*) and that with *geben* POC attestations are infrequent compared to IOC attestations, a fact that is also in agreement with the hierarchy. By contrast, the German verb *werfen* only occurs in POC, usually with a directional meaning, e.g., *Er warf Münzen in die Juke-Box* ‘He threw coins into the juke box’.³⁸ According to Levin and Rappaport Hovav (2005: 228), “a given language will choose its own cut-off point with respect to expression in the double object construction”. This entails that, if the hierarchy is accounted for in terms of ‘transfer of possession’ versus ‘change of location’, then German does not allow *werfen* to be used as a transfer of possession verb and the language has therewith chosen its cut-off point with respect to expression in IOC. In other words, although the motivation for the Ditransitivity Hierarchy is said to be non-linguistic, languages differ in allowing verbs to occur in certain constructions. A throwing event may be non-linguistically the same event as a *werfen* event, but the specific (lexical and grammatical) encodings in different languages have been shown to influence the conceptualisation of events (cf. Slobin 1987; Levinson 2003; Slobin 2003). In Chapter 3, I will return to the distinction between encoded ‘linguistic knowledge’ and general ‘conceptual knowledge’, including encyclopaedic knowledge about facts of the world, as this distinction will prove of major importance in the analysis of the interplay between semantic and pragmatic features associated with the IOC/POC alternation.

³⁸ A DeReKo search reveals that the verb *werfen* occurs in sentences with a Pertinenzdativ (possessive dative) or a *dativus (in)commodi* (e.g., *Er wirft dir den Schlüssel ins Gesicht* ‘He throws the key into your face’, *Ich werfe dir einen Stein in den Garten* ‘I’ll throw you a stone in the garden’). By contrast, IOC is attested with the particle verb *zuwerfen* (e.g., *Er wirft mir ein Seil zu* ‘He throws a rope at me’). One exception was found in a story-like text: “*Du brauchst keinen Ball. Komm, ich **werf dir** die Sonne.*” Und er **wirft ihr** die Sonne **zu**, und Elisabeth fängt, schreit, hat sich verbrannt und er legt ihr einen Verband an [...] “‘You don’t need a ball. Come on, I’ll throw the sun at you.’ And he throws the sun at her and Elisabeth catches, screams, has burned herself and he puts a bandage on her’ (Die Zeit, 25.12.1981).

2.5 Construction – allostruction – constructeme

In order to delineate the scope of the different terms that are used in the literature to describe the variants (or “alternants”) of alternating constructions, in this section, I discuss three important terms in order to be able to use them in a consistent way in the remainder of this study.

Construction

As mentioned in Section 1.2.3, some constructional accounts, e.g., Kay (2013), prefer a narrow definition of construction (cf. Hilpert 2014: 10; 13), whereas others, such as Bybee (2013) and Jackendoff (2013), adopt the extended, frequency-based definition of construction. The broad definition can also be found in Goldberg (2006: 5):

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency.

In a number of recent developments of CxG, an even broader definition of what constitutes a construction has been proposed. It grants constructionhood to any structure with a certain meaning or function that is “cognitively entrenched” (Goldberg 2019: 16):

constructions are understood to be emergent clusters of lossy³⁹ memory traces that are aligned within our high- (hyper!) dimensional conceptual space on the basis of shared form, function, and contextual dimensions.

However, following Stefanowitsch (2011), I will adhere to the original, strict definition which draws on the construction’s non-compositional semantics, as cited in Goldberg (1995: 4):

C is a CONSTRUCTION iff_{def} C is a form- meaning pair $\langle F_i, S_i \rangle$ such that some aspect of F_i or some aspect of S_i is not strictly predictable from C’s component parts or from other previously established constructions.

The reasons that I prefer to use the narrow definition of constructionhood are the following. Firstly, the broad definition poses a problem of delimitation. There is no real cut-off point to determine with which frequency a predictable structure has to occur to receive the status of construction. “Sufficient frequency” is too arbitrary a criterion to

³⁹ Lossy = not fully specified in all detail (Goldberg 2019: 19).

determine constructionhood. In addition, the criterion of cognitive entrenchment makes the CxG enterprise dependent on a number of – for the time being still contentious – commitments regarding ‘cognition’ (De Vaere et al. 2020). However, I surmise that constructional analyses of linguistic data can be conducted without having to rely on speculative assumptions regarding the “psychological reality” of constructions.

Secondly, if “argument structure is a property of the verb” (Stefanowitsch and Herbst 2011), the preferences for one alternant over the other are strongly associated with the valency of the individual verb (cf. Stefanowitsch 2011). Moreover, it does not seem possible to determine “sufficient frequency” in a way that is applicable across different verbs.

In accordance with the Integrative Approach discussed in Section 1.2.6., which aims at complementing insights from CxG and VT with the distinction between semantics and pragmatics according to a layered approach to meaning (cf. Chapter 3), it is important that I can rely in my analysis on a definition of construction that is suitable for aligning the results of the statistical analysis with the relation between encoded (i.e., semantic) and inferred (i.e., pragmatic) meaning. Hence, using frequency and (cognitive) entrenchment as defining criteria for constructionhood (cf. Stefanowitsch 2011) is bound to cause theoretical and methodological problems. I will argue that IOC and POC, which are patterns that probably occur with “sufficient frequency” according to the broad definition, cf. Goldberg (2006), do not qualify as constructions in their own right but are entrenched instantiations, with a corresponding qualitatively different meaning level, of an overarching, underspecified construction that is a form-meaning pair according to the narrow definition.

Allostructions

The term ‘allostructions’ for “variant structural realizations of a construction that is left partially underspecified” was coined by Cappelle (2006: 18) and further elaborated by Perek (2015: 151). It was originally applied to formally and functionally related variants that express the same “meaning”, such as the particle placement alternants *pick up the book* vs. *pick the book up*, cf. Figure 10:

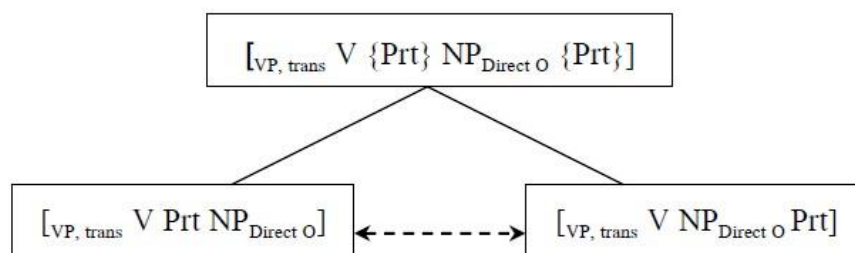


Figure 10 Transitive verb-particle construction with its two allostructions according to Cappelle (2006: 18)

Cappelle's proposal to call the variants allostructions of a more general construction is meant as an intermediate position between the generative approach (e.g., Chomsky 2002 [1957]) that considers one of the two variants as more basic than the other and the mainstream Constructionist Approach that considers both variants to be constructions in their own right, because they differ considerably and can be predicted (e.g., Gries 2003a).

Gries (2003a: 141) argues that each construction is a category in its own right because the particle alternants may contain the same constituents, and hence seem similar, but at the same time they also differ morphosyntactically, semantically and discourse-pragmatically. As a result of these differences, they are not interchangeable in use. However, Gries shows that they can be predicted at a prediction rate of 83.9 per cent. By contrast, Cappelle (2006) does not want to give up the idea that the variants are related. According to Cappelle (2006: 12), the fact that speakers "experience" a relatedness between the alternants does not need to contradict Gries's claim that they are two different constructions. Cappelle further proves his point by referring to the way in which idioms can have two manifestations with the same meaning and also to language acquisition (children are able to "unlearn" unacceptable patterns). In this view, there must exist a link between the alternants in the mind of the speakers. However, in Cappelle's proposal (2006: 18) the issue of meaning is not further elaborated because his case study concerns two variants that mainly differ formally. Although Cappelle zooms in on different factors such as discourse familiarity, weight and focality that can influence the ordering of the constituents, or, as he expresses it, the "choice" between the continuous or the discontinuous pattern of the alternation, he does not explicitly discuss the relation between the meaning of the general construction and the meaning of the allostructions, nor does he specify whether or how the structurally underspecified underlying construction is also underspecified qua meaning.

Perek (2015) refines the concept of allostructions by actually applying it to the 'dative alternation'. He not only provides a "meaning" for the two allostructions, but also for the overarching construction. In particular, Perek treats the English 'dative alternation' as originating in a single dative constructeme meaning 'X CAUSE Y TO HAVE Z' with an underspecified form $NP_x V \{?y?z\}$. Both allostructions that can instantiate this constructeme then express the same "meaning", but have a different formal realisation: either $NP_x V NP_y NP_z$ (the so-called Ditransitive Construction, cf. Section 2.4) or $NP_x V NP_z$ to NP_y (the *to*-dative, cf. Section 2.1) as in Figure 11.

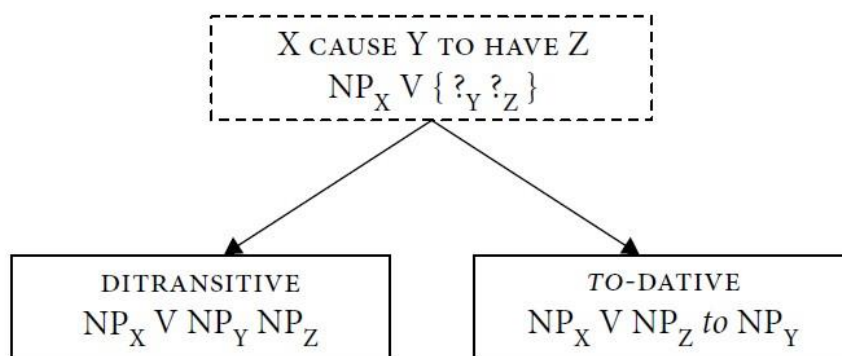


Figure 11 The dative constructeme and its allostructions according to Perek (2015: 156)

In line with CxG, Cappelle and Perek distinguish different levels of schematicity and use the term ‘allostruction’ to designate the variants of a formally underspecified higher-level construction. Although in the present study, I will follow the terminological differentiation introduced by Cappelle and adopted by Perek, my use of both terms will be slightly different. In particular, I will not adopt the “monostratal”, single-layered approach which Cappelle (2006) and Perek (2015) share with mainstream Construction Grammar but analyse the findings of the quantitative analysis from a perspective that builds on a layered approach of language and language use. As will be explained in Chapter 3, I will argue that a further differentiation with regard to meaning is needed in order to situate the allostructions on a meaning level that is qualitatively different from the overarching construction, in line with the aforementioned focus of this study on the differences between the semantic and pragmatic properties of the IOC/POC alternation in present-day German. In accordance with the narrow definition of construction which I apply, I will argue in favour of the view that only the overarching construction (the ‘constructeme’, see below) can be considered a form-meaning pair in its own right in terms of an encoded construction in the German language system. The two allostructions IOC and POC, on the other hand, are construed as instantiations of the overarching construction which are differentiated according to factors pertaining to ‘normal language use’. This entails that they contain additional inferred information that is not, strictly speaking, encoded. For an elaboration of these different levels of meaning, see Chapter 3.

Constructeme

Originally, Cappelle (2006: 19) characterised the overarching construction that represents the underspecified origin of the allostructions as a “supercategory”, for which later the term ‘constructeme’ was coined (cf. Section 1.2.3). Perek (2015: 153) defines a constructeme as “a formally underspecified higher-level construction [...] associated with the meaning shared by the variants of the alternation”. In Cappelle’s and Perek’s approach, a constructeme encapsulates the different formal uses of a construction in one underspecified form, and the meaning is shared with the allostructions. However, given

the single-layered approach adopted in CxG, the constructeme and the allostructions have meanings that are not further differentiated in qualitative terms.

2.6 Constituent order

Constituent order has a special status with regard to the variation between IOC and POC. Unlike English, with its relatively fixed word order, German has a more liberal constituent order. It is difficult to exactly determine the status of constituent order with regard to a (statistical) analysis of the two alternants. More specifically, is constituent order an outcome (dependent variable) or is it a predictor (independent variable) for IOC or POC? In this section, I discuss two aspects concerning the order of the constituents. Firstly, what are the diagnostics that allow us to determine the normal constituent order in a language such as German. Secondly, which factors, from a wide array of semantic, syntactic and/or pragmatic factors, can be expected to influence this constituent order?

Several tests have been applied to determine the normal constituent order and the corresponding descriptive terms usually reflect the kind of diagnostics: ‘dominant’ (and possibly also ‘normal’) is used when frequency counts are performed to determine which constituent order occurs most often in a specific language; ‘basic’ refers to the order from which the alternating constituent order is derived and this term is especially used in transformational accounts to refer to the putative underlying order; ‘neutral’ refers to a pragmatically neutral context (cf. Whaley 1997) and describes the constituent order that has no specific discourse motivation, whereas ‘unmarked’ reflects a typological approach, in which the term refers to the variant that has the least formal marking. ‘Canonical’ is used in word order typology to indicate the position of the finite verb (V) in combination with the subject (S) and object(s) (O). Usually, German is characterised as a SVO language, but in the subordinate clause the canonical constituent order is SOV (cf. Wegener 1985).

From the point of view of language typology, Malchukov et al. (2010: 16-17) observe that word order seems to depend on the flagging of the two nominal arguments: with unflagged R and T⁴⁰ (unflagged = without case marking or adposition), the R-T word order is favoured (cf. e.g., in IOC), but the factors **animacy, topicality and definiteness** also influence the order of the arguments as “R is generally human (and often definite) and

⁴⁰ Whereas in typology the terms T and R are used to describe the (order of the) constituents, some accounts prefer to describe constituents by the semantic roles they perform (THEME and RECIPIENT). In still other accounts, the constituents are denoted by the case in which these roles appear, namely AKK and DAT or “Akkusativobjekt” and “Dativobjekt”, or by the syntactic roles they execute: DO (Direct Object) and IO (Indirect Object). Basically, in this section, all these terms refer to the same constituents, described either from a primarily semantic or primarily syntactic perspective. Thus, in this section, T = THEME = AKK = DO and R = RECIPIENT = DAT = IO.

thus tends to be more topical than the T, which is typically inanimate (and often indefinite)". According to Malchukov et al. (2010), in German R-T seems to be the 'neutral' order with two definite arguments, but if the T is definite and the R indefinite T-R is 'normal', compare R-T in (72) and T-R in (73):

(72) *Ich gab <dem Kind> [den Apfel].*

'I gave the child the apple.'

(73) *Ich gab [den Apfel] <einem Kind>.*

'I gave the apple to a child.'

To explain cases where the R is flagged by an adposition (as is e.g., the case when the RECIPIENT is expressed as a Prepositional Phrase), Malchukov et al. (2010) draw on Dik (1997) who "proposes that the the order T-R is more iconic than the order R-T, because in the unfolding of the event the T is first involved in the action, which reaches the R only in a second step".

Wegener (1986: 13-14), too, contends that "die Denotate des DO direkter in die Handlung involviert sind als die des IO" 'the denotata of the DO are more directly involved in the action than those of the IO'. In IOC, e.g., *Ich habe ihm die Sache erklärt, aber er hat nicht zugehört* 'I explained the matter to him, but he didn't listen', the immediately affected ("betroffen") element (i.e., *die Sache*) is coded in the accusative and positioned next to the (lexical) verb, whereas the indirectly affected element (i.e., *ihm*) appears in the dative and is positioned farther away from the verb. Wegener considers this phenomenon to be a "klarer Fall von Ikonismus" 'a clear case of iconicity'. Wegener maintains that this is also the reason why unsuccessful or unfinished actions can only be expressed in IOC but not POC, e.g., **Ich habe ihn über die Sache aufgeklärt, aber er hat nicht zugehört* 'I informed him about the matter, but he didn't listen'. According to Wegener (1991: 93), iconicity is a factor that definitely plays a role in German constituent order. Wegener (1986: 21) claims that German, with its tendency to posit elements that semantically belong together in the proximity of the verb ("Ikonismus in der Syntax", Posner (1980), cf. Wegener (1985: 245)), in this respect fundamentally differs from English and French. Dik's and Wegener's approaches to iconicity might seem contradictory, but they are not. Dik starts from SVO order and argues that the second element, the THEME, needs to be realised before the third element can be expressed. This implies that the THEME is more closely connected to the verb than the RECIPIENT, which is Wegener's rationale, who however starts her reasoning from SOV order. An important observation is that there is no 'tertium comparationis' that can independently be invoked to establish iconicity, so that one can either take SVO or SOV order as the starting point of one's reasoning. This problem is related to the general principles of syntactic iconicity of which De Cuypere (2008: 142-144) provides a detailed and critical analysis. The three principles are cohesion, adjacency and sequential order. In light of De Cuypere's analysis, Wegener's example of iconicity definitely concerns

proximity of the constituents (i.e., the iconic principle of cohesion), whereas Dik focuses on the principle of adjacency by investigating the directionality of the event.

Interestingly, De Cuypere (2008: 144) adds that “the meaning of any syntactic construction [has] to be known before an iconic ground can be constructed (created and interpreted)”, suggesting that iconicity cannot be situated on the semantic level (where information is encoded in the construction), but rather comes about in discourse, when the construction is put to use. Even more important for my discussion of the ditransitive alternation is his observation that “[t]he meaning of a syntactic construction can therefore not be derived iconically by merely looking at the form of the construction” (De Cuypere 2008: 144). This entails that constituent order does not tell us anything directly about encoded meaning. I refer to De Cuypere (2008) for further discussion of the different aspects of iconicity.

In sum, although iconicity is an interesting aspect that without any doubt could contribute to the alternation, there are practical reasons why I will not be able to deal with it in my statistical analysis. In the methodology chapter (Chapter 4), I will further explain why I did not include constituent order as a regular variable in the model.

Constructional accounts of the ‘dative alternation’ in English usually take as their starting point the Double Object Construction (DOC), which, in English, is confined to a rather strict word order in which the RECIPIENT is the first object and followed by the THEME as the second object. The only exceptions are found in certain dialects that allow for the alternative word order in the so called ‘Alternative Double Object Construction’, e.g., *I gave it him. Give it me!* (cf. Gast 2007; Gerwin 2013). In a case language such as German, however, there are more constituent order possibilities. Moreover, German shows both SVO and SOV structure: in main clauses, such as (74), the verb appears in second position with subsequent IO-DO constituent order, whereas in subordinate clauses the verb is placed at the end of the sentence (75) with preceding IO-DO constituent order. Also in POC both constituent orders are possible (DO-PP and PP-DO), but we will see that not all possibilities occur with the same frequency (cf. Chapter 5 on constituent order).

(74) *Peter gab <dem Kind> [ein Buch].*

‘Peter gave the child a book.’

(75) *Ich weiß, dass Peter <dem Kind> [ein Buch] gab.*

‘I know that Peter gave the child a book.’

As described in Section 1.2.1, previous research on variable German constituent order either discusses it in terms of “flexibility of the arguments” (Starke 1970a), the result of a serialisation process (Matzel 1976) or as a difference in determination (Wegener 1985). Duden (2016: 878) identifies **word class** and **case** as the main factors that determine the

sequence of constituents in the middle field.⁴¹ According to Duden, there is a tendency for the subject to be first followed by the dative and then by the accusative (resulting in NOM-DAT-AKK constituent order), whereas Prepositional Phrases tend to be placed more to the right, especially when they are directional adverbials (76). Also, Prepositional Objects appear more to the right (77).

(76) *Ich vermute, dass nur Otto [die Kiste] <in den Hof> tragen könnte.*

‘I suspect that only Otto could carry the box into the yard.’

(77) *Es heißt, dass der Abgeordnete [die Bürgermeisterin] <an die Verkehrsprobleme> erinnern wollte.*

‘It is said that the MP wanted to remind the mayor of the traffic problems.’

In Duden, deviating constituent orders are said to be primarily a result of information-structural processes, e.g., when a constituent is emphasised (78). Especially “Akkusativobjekte” and “Dativobjekte” can easily change position, cf. (79) vs. (80).

(78) *Ich habe gesagt, dass du <auf ‘diesen Stapel’> [nur wirklich dringende Post] legen sollst.*

‘I said that you should only put really urgent mail on this stack.’

(79) *Die Krankheit hat< den Kindern> [die Mutter] entrissen*

‘The illness snatched the mother from the children.’

(80) *Die Krankheit hat [die ‘Mutter’] <den Kindern> entrissen, (nicht den Vater).*

‘The illness snatched the mother from the children, (not the father).’ [my example HDV]

Other factors that influence constituent order according to Duden (2006: 884; 2016: 880) are **pronominality** (weakly stressed pronominals tend to appear directly after the left bracket, cf. (81)), **animacy** (animate NPs tend to precede inanimate NPs and the tendency towards NOM-DAT-AKK order can be overruled by animacy, cf. (82)) and **definiteness** (definite NPs tend to precede indefinite NPs, cf. (83) and (84)).

(81) *Morgen will <ihr> Anna [den Bericht] übergeben.*⁴²

‘Tomorrow, Anna wants to hand over the report to her.’ (Duden 2016: 881)

⁴¹ In the German topological field model, the middle field is bounded to the left by the **left bracket**, a position where usually the finite verb is found. To the right the middle field is bounded by the **right bracket**, which contains the verbal complex. E.g., *Gestern habe ich ihm einen langen Brief schicken müssen*. Apart from DO and IO, the middle field can be occupied by all sorts of constituents (cf. also Boas and Ziem 2018a: 4-5).

⁴² Only the subject can come between the conjugated verb and the unstressed pronomen: e.g., *Morgen will Anna <ihr> [den Bericht] übergeben*. If both objects are realised as pronomina, there is a tendency to NOM-AKK-DAT: *Anna will [ihn] <ihr> morgen übergeben*.

- (82) *Otto hat [das Kind] <großem Lärm> ausgesetzt.*
 ‘Otto has exposed the child to loud noise.’ (Duden 2006)
- (83) *Anna hat <dem Kind> [einen Zettel] gegeben.*
 ‘Anna gave the child a note.’ (Duden 2016: 882)
- (84) *Anna hat [den Zettel] <einem Kind> gegeben.*
 ‘Anna gave the note to a child.’ (Duden 2016: 882)

Duden points out that **givenness** (“Informationsverteilung im Satz”) may also affect constituent order. For instance, in the middle field new information is positioned to the right, e.g., when, in the first sentence, the scissors have not been mentioned in the preceding context (85) (Duden 2016: 883):

- (85) *Otto hat aus Versehen [die Schere] <in den Müll> geworfen*
Otto hat [die Schere] aus Versehen <in den Müll> geworfen.
 ‘Otto accidentally threw the scissors in the trash.’

Importantly, apart from the fact that factors can overrule each other, Duden (2016: 886) also mentions that factors can mutually reinforce each other, without however going into details. The interaction of the factors is attributed to the default valency of the verb, i.e., in the valency pattern associated with a trivalent verb it is prearranged which factors are most likely to interact.

Lenerz (1977: 17) distinguishes by and large the same influencing factors as those described in Duden. However, his study of the factors that have a bearing on the linear order of nominal constituents (DO, IO, Prepositional Objects and adverbials) in the middle field in German focuses on information structure (in line with the Prague School the topic-focus-structure is termed “Thema-Rhema-Bedingung”) and intonation. Following Behaghel (1932) and Duden (1973), Lenerz (1977: 43) considers IO-DO as the unmarked constituent order (“unmarkierte Abfolge”). Word order changes have as main function to move the rhematic element towards the end of the sentence (at least with definite articles). Conversely, the unmarked word order in prepositional constructions is DO-PP, according to Lenerz (1977: 66). For prepositional constructions, according to Lenerz (1977: 66), the unmarked word order is DO-PP.

With the aim to falsify the largely intuitive assertions made by Lenerz (1977), Gadler (1982) tests the serialisation of both nominal and pronominal elements (IO, DO, PO and adverbials) in the middle field, based on 200 attestations from the Austrian newspaper *Neue Kronenzeitung* (Gadler 1982: 163). Although his corpus is limited, Gadler (1982: 157) finds that syntactic, semantic and pragmatic factors may influence the order of the constituents in the middle field. For example, the **verb** not only requires a certain number

of arguments (“Mitspieler”) by virtue of its valency, but with a verb such as *schicken* the order DO PP is preferred because *schicken* has the semantic feature [+direktional]. Also, pragmatic factors such as the relation between Thema and Rhema may play a role in the serialisation. Gadler also explores the role of the factor definiteness and discusses topicalisation.

According to Meinhard (2003: 402) word order is a fundamental phenomenon that cannot be ignored in Valency Theory. Eroms and Heringer (2003: 253) argue that the basic assumption for German is that, except for fixed word orders, the unmarked basic word order is the default, which is communicatively neutral and normal. As soon as an utterance deviates from the basic constituent order, this has a communicative effect, and usually brings a phrase into focus (a general assertion that is in line with Lenerz’s and Gadler’s observations discussed above). As regards complements, Eroms and Heringer (2003: 256) consider the order NOM-DAT-AKK as the basic constituent order in the middle field. Changes in constituent order arise as a result of several “rules”. Of these, pragmatic focusing when e.g., the THEME or the RECIPIENT is moved to the front of the sentence, is the most relevant for my research. Moreover, Eroms and Heringer (2003: 260) observe that it is important for constituent order whether the object is realised as a full NP or as a **pronoun**, a remark that is again reminiscent of Lenerz’s and Gadler’s accounts. Other factors that influence constituent order are **information structure**, because given information is usually positioned before new information according to the so called Thema-Rhema ordering, and **definiteness**, viz. definite NPs usually precede indefinite ones. Moreover, definite NPs comply to the givenness criterion as they usually refer anaphorically to information already given, and so do pronouns.

Røreng (2011) investigates the order of the (nominal) objects in IOC (which she calls “Doppelobjektkonstruktion” but see Section 2.1) in a transformational framework. In contrast with the previous approaches, she considers AKK-DAT as the basic syntactic word order (Røreng 2011: 188), based on the thematic hierarchies (Agent > Theme > Goal) mentioned by Larson (1988: 382) and Baker (1989: 544). However, there is a conceptual hierarchy which is not necessarily reflected in constituent order. Røreng furthermore contends that DAT-AKK is realised as a result of ‘scrambling’. Her Optimality Theory model follows a restrictional hierarchy in which three factors play a role: **focus**, **animacy** and **case**. She argues that these factors interact. This interaction concerns their strength: animacy is stronger than case and focus is stronger than case and animacy. However, a drawback of Røreng’s study is first that she focuses on constituent order of nominal objects in IOC only but also that she applies a bivariate analysis of her dataset (Røreng

2011: 193).⁴³ The restriction to a bivariate analysis entails that she can only determine whether and to what extent two groups of data are associated with each other. By contrast, a multivariate analysis takes into account the possible influence of other variables as well. In the same vein, but applied to Croatian, which is also a language with variable constituent order, Velnić (2019) studies the influence of the factors **animacy**, **givenness** and **focus** on DO-IO order by means of an acceptability judgement task.

Rauth (2016: 173) does not include pronominal constituents in his corpus study of the linear constituent order regularities, arguing that they are invariant and can be explained structurally. Because his study thus only concerns nominal constituents in German dialects, he assumes a basic constituent order IO-DO in the middle field. Nevertheless, he also argues that the variable relative constituent order depends on a complex interplay of prosodic, morphosyntactic, semantic and pragmatic factors (Rauth 2016: 173).

To conclude this section, I draw attention to Welke (2019: 250) who distinguishes two specific hierarchical levels with regard to constituent order in German, which he calls “Perspektivierungsebenen” ‘levels of perspectivation’. According to Welke, constructions (and the corresponding verbs) are primarily perspectivised in a fixed constituent order, termed the “primäre Perspektivierung”. The primary perspectivation represents the underlying argument order (“tiefer liegende Argumentfolge”). For Nominative-Dative-Accusative-Constructions (*Emil schickt Erwin das Buch* ‘Emil sends Erwin the book’), the primary order corresponds to the normal word order (cf. Lenerz 1977), in which the subject takes the first position and is followed by the dative NP (with the prototypical feature “human”) and then the accusative NP. By contrast, in a “Direktivkonstruktion” (*Emil schickt das Buch an Erwin* ‘Emil sends the book to Erwin’), the accusative NP is said to be perspectivised as the second argument. However, the arguments can take another order at the surface level, which Welke, following Givón (2018 [1979]), situates at the pragmatic level and which he terms “sekundäre Perspektivierung” (Welke’s “sekundäre Perspektivierung” thus corresponds to what is usually called ‘Thema-Rhema-’ or ‘Topic-Focus-structure’). Phenomena such as topicalisation and scrambling are to be situated at this secondary level, according to Welke. Additionally, the German language can also code the arguments morphologically.

In sum, most authors studying the factors that influence the German constituent order agree that the unmarked order of IOC is RECIPIENT-THEME and of POC is THEME-RECIPIENT, whereas authors working in a transformational framework identify THEME-RECIPIENT (and thus POC) as the basic constituent order from which RECIPIENT-THEME is derived. Most authors stress the importance of factors such as definiteness, animacy, pronominality for

⁴³ Røreng’s dataset consists of 2195 sentences with nominal objects in IOC, collected from German (partly translated) literary texts, of which she however only coded 688 (344 with DAT-AKK word order and 344 with AKK-DAT word order). She excluded so called “freie Dative”, idioms and weak verbs. The dataset includes 196 different ‘verbs of transaction’ which are listed as subgroups of ditransitive verbs in Duden (2006: 401).

constituent order variation, next to information-structural factors such as givenness, focus and topicality.

In this study, I adopt a neutral position with regard to the (status of the) basic constituent order in German and assume a non-specified constituent order for the (Direct, Indirect and Prepositional) Objects of three-place verbs. However, constituent order will be annotated in order to determine whether certain verbs and/or the two alternants have a tendency to occur more often in one or the other constituent order.

In Chapter 3, I will outline some additional theoretical guidelines that will accompany my analysis of the semantics and pragmatics of the ditransitive alternation in German.

Chapter 3 The Three-Layer Approach

Towards issues relating to the semantics of the alternation, I will adopt an approach that distinguishes between encoded linguistic content and inferred linguistic content. This entails that I will pay close attention to the semantics/pragmatics interface, along the lines advocated by Coseriu (1975 [1962], 1985, 1987, 1992 [1988]); Grice (1989 [1967]); Levinson (2000); Coene and Willems (2006); Willems and Coene (2006); Welke (2009b); Höllein (2019); Belligh and Willems (2021), who all focus on the difference between code and inference on the clausal level and thus discriminate between that which is encoded in a given language (G. “Bedeutung”) and that which is inferred based on encyclopaedic and world knowledge (G. “Bezeichnung”, variously also called ‘denotation’ or ‘designation’). My aim is to integrate this distinction in my approach to alternating constructions and to observe different levels of content whenever necessary. In this chapter, I define the layered approach and apply it to both the verb and the construction. Next, I briefly evaluate the role of underspecification in semantics and discuss the importance of the intermediary layer of (pragmatic) linguistic content called ‘normal language use’. I also elucidate how a layered approach to linguistic content can be combined with both a Construction Grammar and a Valency Theory Approach. Finally, I briefly clarify to what extent a Probabilistic Approach to the IOC/POC alternation is compatible with the Integrative Approach I will develop.

The theoretical framework I adopt to accommodate the corpus findings with regard to questions of linguistic content provides the basis for a layered approach to the interface of the verbs I investigate and the alternating constructions IOC and POC in which these verbs are found. I will adopt the term ‘Three-Layer Approach’ from Levinson (2000: 21, 27) to refer to this framework. It was most thoroughly developed, albeit partly with different emphases and starting out from different linguistic traditions, in Coserian structural-functional linguistics and neo-Gricean pragmatics (cf. Belligh and Willems 2021, for an extensive overview). In accordance with these two general perspectives on linguistic analysis, I emphasise the need to take into account three different levels of linguistic content in the analysis. These levels are:

- A. encoded *meanings*,
- B. conventionalised *senses* (cf. Levinson's 'utterance type meanings'),
- C. specific *readings* in particular discourse settings (cf. Levinson's 'utterance token meanings') (Levinson 2000: 21-27).

I adopt the view that language-specific encoded meanings of expressions are often 'underspecified' (Coseriu 1985; Levinson 2000; Carston 2002b; Atlas 2005; Ariel 2010; Bach 2010; Carston 2012), a view which is also supported by recent psycholinguistic research (Frisson and Pickering 1999; Frisson 2009, 2015). An underspecified meaning does not have all the features that are typical of fully-fledged concepts in specific instances of language use. Frisson (2009: 116) and Frisson and Pickering (1999: 1380) found empirical evidence (in psycholinguistic experiments using eye-tracking) that readers initially activate a single, semantically underspecified meaning. Frisson and Pickering (1999: 1379) and Frisson (2009: 117) refer to the stage in which an underspecified meaning is made specific on the basis of contextual enrichment as the 'homing-in' stage. This stage entails that a naturally occurring sentence receives a specific reading which may correspond to a distinct, even unique content in a specific discourse setting. However, it is also possible that language users "forego" this stage (Frisson 2009: 117) and do not go beyond processing the encoded underspecified meaning if this is not required for successful communication.

If the 'homing-in' stage of a specific interpretation is attained, contextual enrichment can include any relevant feature of encyclopaedic knowledge but also any Particularised Conversational Implicature (PCI) that may be associated with the expression. However, in many cases the content of an expression in context is no one-off realisation of its encoded meaning. The Three-Layer Approach therefore posits an intermediary layer of 'normal language use' (Coseriu). On this level, a number of conventionalised senses – and, if necessary, more specific subsenses – can be determined. They correspond to the ways in which general encoded meanings, both of lexical units and syntactic constructions, are conventionally ('normally') realised in discourse. These conventionalised interpretations crucially include default or 'preferred' inferences, or Generalised Conversational Implicatures (GCIs) in the terminology of Levinson (2000). With regard to this intermediary level, my analysis will for instance reveal the need to distinguish, in line with previous research of *give* in English (cf. Bresnan et al. 2007), three conventionalised denotational classes, viz. concrete transfer, propositional transfer, and abstract transfer. These conventionalised senses are recurrent in the data. They group together similar readings and can be shown to have a bearing on the realisation of the alternants.

I now turn to the question what a layered account of the IOC/POC alternation with regard to its realisation with transfer verbs such as *geben*, *schicken*, *senden* and various of their morphologically complex counterparts looks like. Apart from being theoretically and internally coherent, such an account should ideally be both empirically valid, i.e.,

supported by corpus findings, and consistent with robust findings of previous research, in particular Valency Theory and Construction Grammar as well as the quantitative approach of morphosyntactic alternations. In what follows I spell out these views in some detail.

I take the view that a synthesis of Valency Theory (VT) and Construction Grammar (CxG) is desirable (cf. Coene and Willems 2006; Welke 2009b; Stefanowitsch 2011; Willems et al. 2011; Ágel 2015; 2017 among others). Linked to the conception of a layered approach to linguistic content, merging VT with CxG entails that the three layers of meaning, senses and readings apply both to the verbs and the Argument Structure Constructions I am investigating. Let us first look at the category verb and then the category construction.

The language-specific encoded meanings (G. “Bedeutungen”) of the trivalent verbs I am interested in are delineated by the oppositions into which they enter. Thus, a verb such as *geben* contrasts with similar three-place verbs designating ‘transfer’ like *schenken* ‘give (as a present)’, *senden* ‘send’, *schicken* ‘send’, *leihen* ‘borrow, lend’, *liefern* ‘supply’, ‘provide’ and their complex counterparts (which in German famously exist in large numbers, compare *übergeben*, *abgeben*, *vergeben*, *versenden*, *weeterschicken*, *zurückschicken*, *verleihen*, *ausliefern*, *überreichen* etc.). Paraphrasing these contrasts with due attention to the relevant features specific to German is not easy, but one has to take into account that knowing a verb’s encoded meaning and providing an appropriate paraphrase of it are two different things: the former concerns the word’s functional meaning potential as part of an internalised lexical paradigm, whereas the latter is geared towards its usage and encompasses senses and subsenses.

In this context it is useful to refer to research into the ‘conditions of denotation’ in the vein of Labov’s (1973) study of the boundaries of word meanings or the minute descriptions of interpretative frames in the spirit of Fillmore’s Frame Semantics (Fillmore 1982). However, both Labov and Fillmore deliberately refrain from delimiting systemic contrasts between encoded meanings and focus on interpretative relations between senses and subsenses and conditions of language use. This is in line with the cognitive (initially prototype theory-based) approach advocated by these authors, which takes a very broad view of linguistic “meaning”. By contrast, in a three-levelled account of the German ditransitive alternation the focus is on the interface of the ditransitive Argument Structure Construction with the verbs that occur in the construction and the ensuing layered semantics, which requires that the language-specific encoded meaning of the verbs is neatly distinguished from its conventionalised senses and contextual readings.⁴⁴

⁴⁴ Semantic differences between languages may also turn out to be informative. For instance, the English verb *send* corresponds to at least two German verbs, *senden* and *schicken*, but it is synonymous to none (note that only *senden* but not *schicken* can be used with regard to, e.g., broadcasting). As I do not envisage a contrastive analysis, I do not further pursue this line of research in the present study.

Under this view, the encoded meaning of *geben* is underspecified with regard to the three major conventionalised senses (concrete, propositional and abstract denotational class) and any of the specific subsenses (e.g., “hand over” is a subsense of the concrete sense, on a par with “administer”, “transmit” etc.). As Frisson (2009); (2015) has shown, underspecification of encoded meaning appears to be typical of verbs with a broad usage range (i.e., ‘multifunctional’ verbs that exhibit polysemy at the level of their senses and subsenses).

Parallel to the difference between what the verbs encode (their “Bedeutung”) and their “Bezeichnung”, i.e., what they denote (or designate) in specific acts of discourse, another aspect that must be taken into account in the analysis of the ditransitive alternation in German concerns the so-called ‘roles’ that are realised by the arguments in ditransitive sentences. With this aspect of the alternation, the focus on the distinction between semantics and pragmatics is raised to the level of the ditransitive construction. In accordance with earlier work (Coseriu 1979, 1987; Welke 1994; Dürscheid 1999; Willems 2006; Welke 2011; Fischer 2013; Ágel 2017; Höllein 2019; Welke 2019; Willems 2020), I acknowledge the importance of distinguishing between language-specific ‘semantic roles’ and non-language-specific ‘denotational roles’ as part of a construction. Whereas ‘semantic roles’ pertain to the realm of encoded meaning (‘semantics’), ‘denotational roles’ pertain to the realm of language use (hence ‘pragmatics’). As explained before, the three roles that are realised in the ASC under study are an AGENT-like argument, a THEME-like argument and a RECIPIENT-like argument. However, although the roles of AGENT and THEME are realised in a fairly constant way (i.e., the AGENT in the nominative, the THEME in the accusative), there is variation with regard to how the RECIPIENT-like argument is realised that partly depends on what the arguments in the sentence denote. Therefore, the second question as to what the two alternants IOC and POC actually encode in the German language system or whether they have to be considered as two to some extent conventionalised alternating variants of a more general pattern with different denotational properties, is subject to empirical investigation and will be further discussed in Chapter 6. Throughout the discussion, I will also aim to incorporate claims and findings from linguistic typology (cf. Malchukov et al. 2007; Bickel 2011; Haspelmath 2013), in particular regarding the argument roles, the alignment pattern and the constituent order of the ditransitive construction in German.

Finally, I briefly consider the relation between the theoretical framework of the Three-Layer Approach and the Probabilistic Approach that I apply as a method and useful tool for the quantitative analysis of the data. The two approaches proceed from different underlying assumptions, but I believe that they are actually complementary. The Three-Layer Approach aims at distinguishing [1] the underspecified encoded meaning of an expression from [2] the default interpretations of the code in ‘normal language use’ and [3] the one-off realisations of the code in specific settings. The Probabilistic Approach, on the other hand, does not explicitly discriminate between semantics (‘the code’) and

pragmatics (= conventionalised and one-off realisations through inference). The Probabilistic Approach assumes that speakers' grammatical preferences are not categorical but probabilistic: preferences can be predicted, relative to a body of utterances, by determining the factors that constrain the realisation of one alternant rather than another, by calculating the probability of certain factors occurring simultaneously (Bresnan 2007; Bresnan et al. 2007; Bresnan and Ford 2010; Szmrecsanyi et al. 2016; Röthlisberger et al. 2017).

However, the assumption that speaker preferences are sensitive to several factors that interact in often subtle ways, is consonant with the assumption in the Three-Layer Approach that linguistic analysis should take into account an intermediary level of 'normal language use'. This intermediary level is neither to be identified with the rules and structures of the language system nor with their in part always unique instantiations in discourse. The properties of 'normal language use' concern speakers' attitudes, intentions and assumptions that are in large part shared by individuals within linguistic communities, i.e., 'normal realisations' of language ("wie man spricht" (Coseriu 1975 [1962]: 81)) or "language lore" and "preferred interpretations" (Levinson 2000: 11, 23-26, 165) in specific historical, social and regional settings and in accordance with register-specific constraints (for the latter differentiation, see in particular Coseriu 2007). Thus, I hold the view that the preferences that can be determined in probabilistic terms and the properties of 'normal language use' in large part coincide, even though the focus of the Probabilistic Approach is on a quantifiable body of utterances (cf. Bresnan 2007) whereas the focus of the Three-Layer Approach is on the multifaceted linguistic competence of individual speakers (cf. Levinson 2000: Ch. 1 and 3; Coseriu 2007: Ch. 2).

According to the Three-Layer Approach, observing the level of 'normal language use' is necessary to chart the regularities that can be observed in the data, both with respect to form and linguistic content. My aim is, therefore, to combine a Probabilistic Approach of the ditransitive alternation in German with a layered approach to linguistic content in an attempt to bring together a rigid empirical methodology for corpus-based research with a theoretical approach of the semantics/pragmatics interface that pays due attention to variation in form and linguistic content. Integrating the results of statistical analyses along the lines of the Probabilistic Approach is thus a means to establish claims about the regularities of 'normal language use' on a firm empirical basis.

In Table 3, I summarise the terminology used in this chapter and in the literature.

Table 3 Summary of the terminology at the semantics/pragmatics interface

	semantics	pragmatics	
	encoded linguistic content	inferred linguistic content	
	“Bedeutung”	“Bezeichnung”	
	semantic roles	denotational roles	
Welke, Höllein	significative semantics	denotative semantics	
	language system	language use	
	language-specific	non language-specific	
		intermediary level	
Coseriu	<i>meaning</i>	<i>conventionalised sense</i>	<i>reading</i>
		‘normal language use’	
Levinson		GCI	PCI
		utterance type meaning	utterance token meaning
	underspecified meaning	denotational class, sense, subsense	
		speaker’s attitudes, intentions, assumptions preferences determining factors	

Chapter 4 Methodology

The following sections successively describe the data collection, retrieval and annotation process of the noncomplex verbs *geben*, *schicken* and *senden* and of the complex verbs that were selected for analysis. The chapter concludes with a brief section on the technical description of the statistical modelling.

4.1 Data collection

4.1.1 Characteristics and limitations of the corpus

My data source is the *Deutsches ReferenzKorpus* (DeReKo), a 46,9 billion words corpus (state 18.01.2020) consisting of written present-day German texts from literary, scientific and non-specialist texts, a large number of newspaper articles and other text varieties. Presently it can be queried and analysed free of charge via the system KorAP, but at the time when I started my compilation in 2015, the application KorAP was still under construction, so that only the three COSMAS (Corpus Search, Management and Analysis System) interfaces were available. After registration, the corpus data can be used for non-commercial, academic purposes.

For all data I used the W-öffentlich database, the publicly accessible part of the *Archiv der geschriebenen Sprache*. I started my data collection in 2015 and the compilation of the different datasets continued steadily until 2018. Compared to 2015, the amount of data in DeReKo has been increased considerably as new data are added regularly (e.g., already existing newspaper archives are updated with recent text material, or material from new sources is also integrated into the database), so that DeReKo now consists of 34.068.430 texts with 9.840.692.470 word forms: it is the largest collection of electronic corpora for

written German contemporary texts.⁴⁵ I accessed the data through the web interface COSMAS II_{web}. At the time when I started my compilation, the morphosyntactically annotated corpora (the so-called TAGGED⁴⁶ corpora) were rather limited so that I chose not to use them, and consequently, I resorted to general queries and to the manual selection of IOC and POC sentences to make sure that no attestations were disregarded or lost due to technical limitations. For more specific information about the queries, see the relevant sections.

4.1.2 Selection of verbs

According to the criteria explained in the Introduction, the noncomplex verbs that will be studied are *geben*, *schicken* and *senden*. To determine the degree of ditransitivity of the verbs *geben*, *schicken* and *senden* in present-day German, I first collected two random samples of 100 hits using the queries “&geben”, “&schicken” and “&senden” in the W-öffentlich DeReKo database. These particular queries retrieve sentences with all (conjugated) forms of the verbs *geben*, *schicken* and *senden* in the corpus, but sometimes also retrieve non-verbal forms such as adjectives. As a result of this query, Table 4 provides an overview of the syntactic possibilities that the noncomplex verbs under study feature. In the first column it is indicated how many of the 200 exported attestations were verbal realisations. The following columns show the number and the percentages (rounded figures, in bold) of intransitive, monotransitive and ditransitive realisations based on the verbal attestations. In regard to the monotransitive attestations, two additional columns indicate the (percentage) non-directional uses vs. sentences with a directional PP, as regards the ditransitive attestations the (percentage) IOC and POC is indicated. Note that directional PP realisations such as e.g., *ein Mädchen nach Amerika schicken* ‘send a girl to America’ are not considered as ditransitive and therefore listed separately under the monotransitives.

Although the noncomplex verb *geben* is used monotransitively in 65% of the cases, it is seldom used with directional PPs, 97% of its monotransitive use being non-directional, cf. (86). The noncomplex verb *senden* is used monotransitively in 40% of the cases and ditransitively in 56%, and only has a very slight preference for directional PPs (52%) whereas ditransitive POC is strongly preferred. Not only does *schicken* have a preference for monotransitive use (72%), 84% of the monotransitive attestations concern uses with a

⁴⁵ <https://www.ids-mannheim.de/cosmas2/projekt/referenz/archive.html>. DeReKo also contains texts from the more recent past.

⁴⁶ E.g., the TAGGED-C-öffentlich corpus contains to date (28/02/2020) texts from 18 sources, limited to a period from 1997 to 2009, whereas W-öffentlich now contains more than 80 different text sources covering a period from 1953 to 2019. At the time of my data collection, the 2019 material had not been added yet.

directional PP, cf. (87), indicating that *schicken* is indeed mainly used as a verb of motion and *geben* is not at all, whereas *senden* displays no real preference and also marginally occurs in intransitive uses, cf. (88).

(86) *Sie gab [Tipps für Kinder und Erwachsene].*

‘She gave tips for children and adults.’

(87) *Die schwedische Regierung schickt [Fahnder und PR-Leute] <in die Ateliers>.*

‘The Swedish government sends investigators and PR people to the studios.’

(88) *Nein. Siri. Scheiße. Siri, nicht senden!*

‘No. Siri. Shit. Siri, don’t send!’

Table 4 Overall frequency of the noncomplex verbs under study and their relative frequency in an explicit ditransitive syntax measured by means of random samples

verb	intransitive		monotransitive		ditransitive			
	N=	total	total	non-directional	directional PP	total	IOC	POC
<i>geben</i> ⁴⁷	52	0 (0%)	34 (65%)	33 (97%)	1 (3%)	18 (35%)	17 (94%)	1 (6%)
<i>schicken</i>	163	0 (0%)	118 (72%)	19 (16%)	99 (84%)	45 (28%)	16 (36%)	19 (42% <i>an</i>) 10 (22% <i>zu</i>)
<i>senden</i>	114	4 (4%)	46 (40%)	22 (48%)	24 (52%)	64 (56%)	8 (13%)	54 (84% <i>an</i>) 2 (2% <i>zu</i>)

⁴⁷ Because an export with the verb *geben* results in too many attestations of the existential use *es gibt* 'there is', I manually deleted these uses from the samples. The remaining attestations were then combined into a new sample of 100 sentences, of which only 52 qualified for the test.

Subsequently, I determined the degree of ditransitivity for the complex verbs, because not all trivalent verbs of transfer are used in ditransitive constructions to the same extent. A considerable number of complex verbs had to be excluded from this study, although a Google search sometimes proved that they do occasionally alternate (e.g., although *versenden* according to my calculations in Table 5 preferably occurs in POC, the IOC sentence *Liebherr versendet dem Kunden zunächst eine Bestellbestätigung* ‘Liebherr first sends the customer an order confirmation’ was found by means of a simple Google search). However, the excluded verbs either do not alternate sufficiently, or extracting sufficient examples from DeReKo proved to be impossible to make a statistical analysis viable.

Analogous to the procedure employed for the noncomplex datasets, I first conducted random samples of 100 sentences per verb (queries: “&abgeben”, “&einsenden” etc.), in order to determine which complex verbs to select for the dataset. The complex verbs that did not qualify for the dataset are listed in Table 5. For *vergeben*, two random samples were performed instead of one, because originally *vergeben* seemed to be a candidate for the alternation.

The complex -*geben* verb *vergeben* (mainly POC) did not qualify for the dataset, neither did the complex -*schicken* verbs *verschicken* (mainly POC), *vorausschicken* (mainly IOC), and *zuschicken* (mainly IOC), although these verbs may occasionally alternate. However, for these verbs lack of data made (over)sampling practically impossible. I adopted the same exclusion principle for the complex -*senden* verbs *absenden* (mainly POC), *aussenden* (mainly POC), *entsenden* (no ditransitive uses, only monotransitive PP destination), *weetersenden* (mainly POC), and *zusenden* (mainly IOC). Although *nachsenden* (87% IOC vs 13% POC), shows more alternation than the other complex -*senden* verbs, it was nevertheless ignored, because of the occurrence of too many reflexive and *lassen-* and *bekommen-*passive uses.

Table 5 Complex verbs that barely alternate

verb	ditransitive			
	N=	total	IOC	POC
<i>absenden</i>	43	7 (16%)	0 (0%)	7 (100%)
<i>aussenden</i>	100	3 (3%)	0 (0%)	3 (100%)
<i>entsenden</i>	99	0 (0%)	0 (0%)	0 (0%)
<i>nachsenden</i>	86	54 (63%)	47 (87%)	5 (9% an) 2 (4% zu)
<i>vergeben</i>	147	22 (15%)	0 (0%)	22 (100%)
<i>verschicken</i>	94	28 (30%)	0 (0%)	28 (100%)
<i>versenden</i>	84	14 (17%)	0 (0%)	14 (100%)

<i>vorausschicken</i>	100	10 (10%)	10 (100%)	0 (0%)
<i>weetersenden</i>	42	18 (43%)	0 (0%)	17 (94% <i>an</i>) 1 (6% <i>zu</i>)
<i>zuschicken</i>	100	81 (81%)	81 (100%)	0 (0%)
<i>zusenden</i>	87	71 (82%)	71 (100%)	0 (0%)

If the first sample showed alternation between IOC and POC, I performed a second sample with the same query. With regard to the complex verbs that were found to alternate, Table 6 displays in the first column how many of the 200 exported attestations were taken into account. The following columns show the number and the percentages (rounded figures, in bold) of intransitive, monotransitive and ditransitive realisations based on the remaining verbal attestations. As regards the monotransitive attestations, two additional columns indicate the (percentage) non-directional uses vs. sentences with a directional PP, regarding the ditransitive attestations the (percentage) IOC and POC are indicated. Note that directional PP realisations such as e.g., *ein Kind nach Kuba zurückschicken* ‘send back a child to Cuba’ are not considered as ditransitive and therefore listed separately under the monotransitives.

With regard to *geben*, the alternating counterparts *abgeben* ‘submit, hand over’, *preisgeben* ‘disclose’, *übergeben* ‘hand over’, *weitergeben* ‘pass on’ and *zurückgeben* ‘give back’ were thus selected. With regard to *schicken*, the verbs *einschicken* ‘send in’, *weeterschicken* ‘send on, forward’ and *zurückschicken* ‘return, send back’ qualified for the dataset. With regard to *senden*, the verbs *einsenden* ‘send in’, *übersenden* ‘send’ and *zurücksenden* ‘return, send back’ were selected. Additionally, the complex verbs *verkaufen* ‘sell’, *ausleihen* ‘lend, borrow’ and *verleihen* ‘give, award’ were added to the complex dataset, because they also partake in the alternation under study, although their noncomplex forms *kaufen* and *leihen* do not (or not sufficiently). However, it should be kept in mind that I focused on complex verbs with the base verbs *-geben* and *-schicken* or *-senden*, and added three verbs of which the base verb does not alternate (*verkaufen*, *ausleihen*, *verleihen*) to see whether the predictions found for the *-geben* and *-schicken/senden* complex datasets could also be applied to complex verbs with another base verb. Nevertheless, there are other complex verbs (such as e.g., *überreichen* ‘hand’ and *ausliefern* ‘deliver, extradite’⁴⁸) which also could have qualified for this third category of complex verbs.

⁴⁸ Whereas *reichen* ‘hand, pass’ does not alternate at all, two random samples of 100 attestations each with *liefern* ‘supply, provide’ show that the verb is used ditransitively in approximately 19% of the cases and shows an alternation rate of 31 IOC (81%) vs. 7 (18%) POC, practically excluding it from the category of non-alternating noncomplex verbs.

Table 6 Overall frequency of the complex verbs and their relative frequency in an explicit intransitive, monotransitive and ditransitive syntax measured by means of random samples

verb	N=	intransitive	monotransitive	ditransitive				
		total	total	non-directional	with directional PP	total	IOC	POC
<i>abgeben</i>	157	0 (0%)	136 (87%)	132 (97%)	4 (3%)	20 (13%)	4 (20%)	16 (80%)
<i>ausleihen</i>	156	1 (1%)	102 (65%)	94 (92%)	8 (8%)	53 (34%)	25 (47%)	28 (53%)
<i>einschicken</i>	194	0 (0%)	176 (91%)	151 (86%)	25 (14%)	18 (9%)	4 (22%)	11 (61% <i>an</i>) 3 (17% <i>zu</i>)
<i>einsenden</i>	131	0 (0%)	101 (78%)	99 (98%)	2 (2%)	30 (23%)	5 (17%)	25 (83%)
<i>preisgeben</i>	184	0 (0%)	144 (79%)	143 (99%)	1 (1%)	40 (22%)	38 (95%)	2 (5%)
<i>übergabe</i>	163	0 (0%)	28 (17%)	24 (86%)	4 (14%)	135 (83%)	74 (55%)	61 (45%)
<i>übersenden</i>	181	0 (0%)	45 (25%)	41 (91%)	4 (9%)	136 (75%)	88 (65%)	45 (33% <i>an</i>) 3 (2% <i>zu</i>)
<i>verkaufen</i>	189	7 (4%)	152 (80%)	149 (98%)	3 (2%)	30 (16%)	7 (23%)	23 (77%)
<i>verleihen</i>	198	0 (0%)	54 (27%)	49 (91%)	5 (9%)	144 (73%)	127 (88%)	17 (12%)
<i>weitergeben</i>	175	0 (0%)	67 (39%)	50 (75%)	17 (25%)	108 (62%)	10 (9%)	98 (91%)
<i>weeterschicken</i>	197	1 (1%)	131 (66%)	81 (62%)	50 (38%)	65 (33%)	2 (3%)	49 (75% <i>an</i>) 14 (22% <i>zu</i>)
<i>zurückgeben</i>	199	1 (1%)	99 (50%)	95 (96%)	4 (4%)	99 (50%)	67 (68%)	32 (32%)
<i>zurückschicken</i>	196	0 (0%)	170 (87%)	84 (49%)	86 (51%)	26 (13%)	7 (27%)	16 (62% <i>an</i>) 3 (12% <i>zu</i>)
<i>zurücksenden</i>	196	2 (1%)	138 (70%)	124 (90%)	14 (10%)	56 (29%)	10 (18%)	45 (80% <i>an</i>) 1 (2% <i>zu</i>)

4.1.3 Data retrieval

To answer the first research question regarding the extent of the constructional variation between IOC and POC with *geben*, *schicken* and *senden* in present-day German as measured by their relative occurrence, I collected a data sample using the queries “&geben”, “&schicken” and “&senden” in the W-öffentlich DeReKo database. These particular queries retrieve sentences with all conjugated forms of the verbs *geben*, *schicken* and *senden* in the corpus. To maximise the randomisation effect, I created four separate random samples of 100 hits for each verb and then calculated the relative frequencies for each construction and verb. The results of the random samples will be discussed in the relevant subsections in Chapter 5.

For the second research question I created a new sample with the queries “&geben”, “&geben an”, “&schicken”, “&senden” and “&senden NICHT an”. The query “&geben an” was added to retrieve more POC sentences with the verb *geben*, because IOC is the most common alternant with this verb. The query “&senden NICHT an” was added to retrieve instances of *senden* + NP, because POC occurrences initially greatly outnumbered IOC occurrences for *senden*. DeReKo returns a maximum output of 10.000 sentences. I used the initial samples of 10.000 observations for *geben*, *schicken* and *senden* to manually filter the relevant attestations for the three verbs. For *geben*, I oversampled⁴⁹ POC occurrences to compose a more balanced dataset. Oversampling is a common practice in the presence of a highly imbalanced outcome variable (e.g., fraud detection) to facilitate a multivariate analysis of the data. For *schicken* and *senden* the imbalance was less substantial, and oversampling was not necessary, except for zu-POC. The data collection process for the complex verbs was done similarly, except that no oversampling was carried out. It further appeared that the corpus contains fewer attestations for certain verbs, so that the maximum output of 10.000 sentences was not always reached. Oversampling was accordingly impossible. The additional details of the data collection process are described in Subsection 4.1.3.3.

The selected sentences are from German (D), Austrian (AT), Swiss (CH) and Wikipedia (W) sources (D = 69%, AT = 13%, CH = 13%, W = 5%) and cover a period of time from approximately 1985 to 2019. I included both possible orders of RECIPIENT and THEME (IOC with R-T and T-R and POC with T-R and R-T) as well as all possible other constituent orders regarding the position of the subject and the (lexical) verb.⁵⁰

⁴⁹ Oversampling means that more observations from the minority class are collected. Thus, I retrieved about the same number of POC as IOC, while in reality POC is less common than IOC.

⁵⁰ During the whole data retrieval process, in case of doubt, I could rely on the help of the other members of the research group, Klaas Willems, Ludovic De Cuyper, Kristof Baten and Evi Van Damme, who double-checked several of my samples.

4.1.3.1 *Geben*

The data sample for *geben* was initially collected by means of the query “&geben”, which retrieves sentences with all the conjugated forms of the verb *geben*. This was followed by considerable data cleaning as many false hits had to be removed. As Eichinger (2015: 99-101) already observed, most sentences with *geben* are actually not ditransitive, but instead instances of the impersonal existential construction *es gibt*, the reflexive ‘attitudinal’ construction (e.g., *er gibt sich zuversichtlich* ‘he expresses his confidence’), or IOC without an overt RECIPIENT (e.g., *Sie geben Einblick in ihren Lieblingssport* ‘they provide insight into their favourite sport’). The query “&geben” allowed me to collect IOC sentences, but it returned few POC instances.

As I wish to analyse the factors that motivate the alternation, I oversampled the instances with POC, so as to obtain a balanced dataset, with an almost equal proportion of IOC and POC sentences. This allows me to perform a multifactorial statistical analysis whose findings moreover qualify for a sufficiently detailed qualitative analysis. To retrieve more POC sentences, I additionally conducted specific queries with the preposition *an* of the following type: “&geben /s0 an”, “&geben /s0 an die”, “&geben /s0 an ein” etc. (“/s0” searches for words in the same sentence).

Attestations excluded from the *geben* dataset for obvious reasons are:

- PPs that are modifiers of NPs rather than Indirect Objects of *geben*, cf. (89);
(89) *Am 21.März 1950 gab der Geschäftsführer der alliierten Hohen Kommission in einem Schreiben an das Bundeskanzleramt [die Genehmigung, das Sportfechten wieder aufzunehmen].*
‘On March 21, 1950, the managing director of the Allied High Commission issued a letter to the Federal Chancellery authorizing the resumption of sports fencing.’
- lexicalised verbo-nominal constructions that do not alternate, e.g., *etwas an die Hand geben* (meaning ‘provide’), cf. (90);
(90) *Wir wollten <den Vereinen> [die Termine für ihre eigene Planung] an die Hand geben.*
‘We wanted to provide the dates to the clubs for their own planning.’
- non-alternating idioms such as *jemandem das Jawort geben* ‘to consent in matrimony’, *jemandem das letzte Geleit geben* ‘to render the last honours to a deceased person’, *jemandem das Nachsehen geben* ‘outperform, beat someone’, *der Trauer Worte geben* ‘express one’s grief in words’;
- the non-alternating phrasal verb *geben an* (occasionally also *in*) with the meaning ‘add’ in the context of preparing food, cooking etc., cf (91).

- (91) *[Gewürfelte Zwiebeln] können roh oder mit heißer Brühe übergossen an den Salat gegeben werden.*
'Diced onions may be added to the salad raw or doused with hot stock.'

The final *geben* dataset consists of N = 1336 sentences in which *geben* is either used with IOC (N = 723) or POC (N = 613).

4.1.3.2 *Schicken and senden*

I created a sample with the queries “&schicken”, “&senden” and “&senden NICHT an”. The latter query was added to retrieve instances of *senden* + NP because POC occurrences initially greatly outnumbered IOC occurrences for *senden*. DeReKo returns a maximum output of 10.000 sentences. I used the initial samples of 10.000 observations for *schicken* and *senden* to manually filter and collect IOC and POC occurrences for both verbs.

The following instances (of both IOC and POC) were excluded from the *schicken* and *senden* dataset:

- With regard to *schicken*: sentences with monotransitive compound verbs such as *wegschicken* ‘send away’, *losschicken* ‘send away’, *heimschicken* ‘send home’, reflexive constructions with *sich schicken* ‘comply with’ and *sich anschicken* ‘prepare to’, and sentences without an overt RECIPIENT, cf. (92) were excluded:

- (92) *Die Polizei hat sofort [Einsatzteams] geschickt.*
'The police immediately sent task forces.'

- With regard to *senden*: all sentences in which *senden* instantiates the sense ‘broadcast’ were discarded, cf. (93) and (94), because they are not ditransitive. I also excluded the frequent occurrences of the compound verbs *zusenden* ‘send, forward’ and *aussenden* ‘send out’, because I restricted the dataset to the noncomplex verb *senden*.

- (93) *[Postillon-Witze] werden seit längerem im Radio auf Bayern3 gesendet.*
'Postillon jokes have been broadcast on Bayern3 for a long time.'

- (94) *ARD sendet live ab 20.15 Uhr.*
'ARD broadcasts live from 8.15 pm.'

Basically, all non-alternating instances, i.e., instances that could not be converted into the respective variant of the alternation, were discarded. According to this diagnostic test, the following instances were also excluded from the dataset:

- Sentences with directional PPs with *in*, *auf* and *nach* that designate a destination were excluded (e.g., *ins Ausland schicken/send* ‘to send abroad’, *aufs Handy senden* ‘send to the mobile phone’, *nach Laos senden* ‘send to Laos’), as directional instances are not considered ditransitive for lack of a RECIPIENT-like argument. Likewise, *schicken* and *senden* combine with several other directional prepositions: *durch*, *um*, *unter*, *über*, *vor* (e.g., *durch die Stadt schicken* ‘send through the city’, *um die Welt schicken* ‘send around the world’, *unter die Dusche schicken* ‘send to the showers’, *über den Rhein schicken* ‘send across the Rhine’, *vor die Tür schicken* ‘send outside the door’). I do not further consider these uses. Following E-VALBU: “Auch wenn einige Verben Adverbialia als Komplemente fordern, sind Adverbialia prototypischerweise Supplemente” ‘Even if some verbs require adverbials as complements, adverbials are prototypically supplements’, I consider PPs such as *in den Kampf*, *auf das Spielfeld*, *nach Frankreich* ‘into battle, to the field, to France’ etc. as adjuncts, and sentences such as (95) and (96) as monotransitive uses of the verb *schicken*.

(95) *Er schickte [die Soldaten] <in den Kampf>.*

‘He sent the soldiers into battle.’

(96) *[Patrick Groetzki] wurde <auf das Spielfeld> geschickt.*

‘Patrick Groetzki was sent onto the field’

- Although POC with the prepositions *an* and *zu* can alternate with IOC, idiomatic chunks (“fixed goal idioms”, according to Levin and Rappaport-Hovav (2011: 9)) such as *zum Teufel schicken* ‘send to hell’, *zur Schule schicken/send* ‘send to school’, were discarded, given that in these cases no alternation is possible. By the same token, purely directional uses of the prepositions *an* and *zu* (e.g., *an die Front schicken* ‘send to the front line’, *zur Insel senden* ‘send to the island’) were also excluded.
- Instances with PPs introduced with *zu* and having an event-reading such as *zum Duschen schicken* ‘send to the showers’, *zum Wintersport schicken* ‘send to the winter sports’ were excluded. Again, no alternation is possible.
- Following other studies that systematically exclude benefactives from their research, (e.g., Bresnan and Nikitina 2003: 26; Levin 2006: 7; Bresnan et al. 2007: 91; Theijssen 2012: 2; Röthlisberger et al. 2017) I discarded instances in which the dative has to be analysed as a *dativus commodi* (BENEFICIARY) or *dativus incommodi* (MALEFICIARY), except when the semantic role was ambiguous, cf. (97):

- (97) *Die Staatsanwälte sind ungläubig und schicken <ihm> [den Amtsarzt] ins Krankenhaus.*
 ‘The prosecutors are skeptical and send the public health officer to him to the hospital/
 to the hospital for him.’
- I also disregarded *bekommen*-, *kriegen*-, and *erhalten*- passives, cf. (98) because in these passives the subject does not allow the alternation. Although *lassen* passives do alternate (cf. Section 2.3), they mainly occur with the verbs *schicken* and *senden*, and hence there is insufficient reference material to compare with the other verbs. For this reason, *lassen*-passive were also omitted.
- (98) *<Er> bekommt vom Arbeitsamt [Bewerber] geschickt.*
 ‘He receives applicants sent from the employment office.’
- Because I applied a bottom-up approach, initially an additional factor Address was added to the list of variables. However, given that this variable shows no constructional variation at all (only POC was observed), I excluded all sentences in which an address or the word *Adresse* or *Anschrift* appeared in order not to bias the datasets on the basis of non-alternating instantiations.
 - In the *schicken* and *senden* dataset it was observed that IOC and POC with *an* can be combined in one and the same clause, resulting in a constructional pattern I term ‘IOPOC’ for convenience sake; cf. (99):
- (99) *Senden Sie <uns> [eine Mail] <an mopokultur@mopo.de>.*
 ‘Send us an email at mopokultur@mopo.de.’

Sentences such as (99) were not included because in all instances of IOPOC in my data, the PP designates an address which invariably entails POC. Moreover, it could be argued that the dative NP in (99) is best analysed as an EXTERNAL POSSESSOR rather than a RECIPIENT, so that IOPOC sentences are actually instances of POC with an extra argument added. In that case these sentences would not qualify for the dataset either, as IOC/POC alternation is no option.

I found motivation for also including *zu*-POC in the dataset in Matzel (1976: 153) who, besides the IOC/*an*-POC alternation with verbs such as *schicken* and *senden*, also describes the IOC/*zu*-POC alternation in which the dative includes both a personal designation (“persönliche Bestimmung”) and a locational goal (Helbig 1973: 179), so that the dative can be said to be ambiguous as to whether it expresses a RECIPIENT or a DESTINATION.

Although the dataset had originally been oversampled resulting in 2689 observations,⁵¹ the final *schicken* and *senden* dataset was then resampled according to the percentages obtained by 4 new random samples of 100 attestations each, with the aim to establish the proportions between IOC and (*an* and *zu*)-POC and to be able to compare the effect of the two verbs. Of the 400 attestations with *schicken*, only 24% was found ditransitive (94/400) and for *senden* 36% (143/400). The proportions are listed in Table 7.

Table 7 Ditransitive realisations of *schicken* and *senden* based on 4 random samples of 100 attestations each.

	IOC	POC		total
<i>schicken</i>	38 (40%)	56 (60%)	<i>an</i> -POC = 48 (86%) <i>zu</i> -POC = 8 (14%)	94 (100%)
<i>senden</i>	23 (16%)	120 (84%)	<i>an</i> -POC = 117 (97%) <i>zu</i> -POC = 3 (3%)	143 (100%)

Based on these proportions, the final dataset of 1945 attestations was reseeded. It consists of 451 IOC and 677 POC *schicken*-attestations and 131 IOC and 686 POC *senden*-attestations representing the rate of 40% IOC vs 60% POC for *schicken* and 16% IOC vs. 84% POC for *senden* (cf. Table 8). *An*-POC attestations outnumber *zu*-POC attestations because of the selection procedure described above, that only allowed (potentially) alternating *zu*-attestations.

Table 8 Proportions IOC/POC in the *schicken*/*senden* dataset

	IOC	POC		total
<i>schicken</i>	451 (40%)	677 (60%)	<i>an</i> -POC = 525 (78%) <i>zu</i> -POC = 152 (22%)	1128 (100%)
<i>senden</i>	131 (16%)	686 (84%)	<i>an</i> -POC = 568 (83%) <i>zu</i> -POC = 118 (17%)	817 (100%)
total	582	1363		1945

4.1.3.3 Complex verbs

In the complex datasets, I collected my data by means of the queries “&abgeben”, “&preisgeben”, “&weeterschicken”, “&verkaufen” etc. to retrieve sentences with all the conjugated forms of the relevant verbs. Specific queries were also used to e.g., retrieve

⁵¹ The original, oversampled, dataset contained 1343 attestations with *schicken* (666 IOC, 677 POC of which 525 with *an* and 152 with *zu*), and 1346 with *senden* (660 IOC, 686 POC of which 566 with *an* and 120 with *zu*).

separated forms of separable verbs (e.g., *er schickt ... weiter*), or more POC instantiations with *an*. To that aim, queries such as “&schicken /s0 weiter” or “&verkaufen /s0 an” were performed. The operator “/s0” in COSMAS generates sentences in which the particle *weiter* or the preposition *an* occur in one and the same sentence as the conjugated verb. The export process was followed by considerable data cleaning as many false hits had to be removed, according to the same principles applied for the noncomplex verbs. Because the exclusion principles have been described in detail above, I only give some additional examples here: the type of query I used also generates non-verbal realisations, such as substantives, e.g., *Abgabe* ‘delivery’ or adjectival uses, e.g., *eine abgegebene Steuererklärung* ‘a returned tax declaration’ and deviant verbal senses such as *sich übergeben* = ‘throw up’ that do not concern the alternation under study, therefore these attestations were deleted from the sample.

Subsequently, for the statistical analysis, the complex dataset was split into three groups: the complex *-geben* verbs were grouped together and so were the complex *-schicken/senden* verbs. *Ausleihen*, *verleihen* and *verkaufen* were grouped to constitute the third group. For each group of complex verbs, a random selection of the collected sentences was made, in order to reflect the observed proportions IOC/POC reported in Section 4.1.2 (e.g., *abgeben* 20% IOC vs 80 % POC etc).

Complex *-geben*

The resampling procedure described above reduced the original complex *-geben* dataset from 863 to 796 attestations (cf Table 9), bringing the total number of IOC attestations to 382 (48%) and the POC-attestations to 414 (52%).

Table 9 Proportions IOC/POC per complex *-geben* verb

	IOC	POC	total
<i>abgeben</i>	15 (20%)	61 (80%)	76 (100%)
<i>preisgeben</i>	83 (95%)	4 (5%)	87 (100%)
<i>übergeben</i>	142 (55%)	116 (45%)	258 (100%)
<i>weitergeben</i>	17 (9%)	174 (91%)	191 (100%)
<i>zurückgeben</i>	125 (68%)	59 (32%)	184 (100%)
total	382 (48%)	414 (52%)	796 (100%)

Complex *-schicken/senden*

For the complex *-schicken/senden* dataset, the resampling procedure gave the results represented in Table 10. The total number of attestations taken into account for the

statistical analysis of complex *-schicken/send*en is 1070 (reduced from an original dataset of 1280 attestations).

Table 10 Proportions IOC/POC per complex *-schicken/send*en verb

	IOC	POC	total
<i>einschicken</i>	40 (22%)	141 (78%)	181 (100%)
<i>einsenden</i>	22 (17%)	109 (83%)	131 (100%)
<i>übersenden</i>	100 (65%)	55 (35%)	155 (100%)
<i>weeterschicken</i>	6 (3%)	180 (97%)	186 (100%)
<i>zurückschicken</i>	48 (27%)	130 (73%)	178 (100%)
<i>zurücksenden</i>	43 (18%)	196 (82%)	239 (100%)
total	259 (24%)	811 (76%)	1070 (100%)

Ausleihen, verleihen, verkaufen

The results of the resampling process for *ausleihen*, *verleihen* and *verkaufen* are represented in Table 11, 879 attestations from a total of 1191 survived the reduction process.

Table 11 Proportions IOC/POC per complex verb

	IOC	POC	total
<i>ausleihen</i>	81 (47%)	91 (53%)	172 (100%)
<i>verkaufen</i>	87 (23%)	289 (77%)	376 (100%)
<i>verleihen</i>	291(88%)	40 (12%)	331 (100%)
total	459 (52%)	420 (48%)	879 (100%)

4.2 Data annotation

The observations were annotated for 27 factors. These include, apart from the dependent variable, several morphosyntactic, semantic, and pragmatic factors. The list of factors is inspired by corpus-based research on the English ‘dative alternation’, e.g., Bresnan et al. (2007), Bresnan and Ford (2010), Theijssen (2012), Röthlisberger et al. (2017) but extended and adapted to the German data. Table 12 indicates the variables that were annotated in the various datasets and the variables that were used in the evaluation.

Table 12 Variable annotation in the different datasets

Variable	<i>geben</i>	<i>schicken/senden</i>	<i>complex -geben</i>	<i>complex -schicken -senden</i>	<i>ausleihen, verleihen, verkaufen</i>
1. Constructional variant	✓	✓	✓	✓	✓
2. Order of THEME vis-à-vis REC	✓	✓	✓	✓	✓
3. Animacy of AGENT	✓	✓	✓	✓	✓
4. Animacy of THEME	✓	✓	✓	✓	✓
5. Animacy of RECIPIENT	✓	✓	✓	✓	✓
6. Concreteness of THEME	✓	✓	✓	✓	✓
7. Concreteness of RECIPIENT	✓	✓	✓	✓	✓
8. Idiomaticity of THEME	✓	✓	✓	✓	✓
9. Metaphor	✓	✓	✓	✓	✓
10. Propernounhood of RECIPIENT	✓	✓	✓	✓	✓
11. Denotational Class	✓	✓	✓	✓	✓
12. Sense	✓	✓	✓	✓	✓
13. Verb		✓	✓	✓	✓
14. Voice	✓	✓	✓	✓	✓
15. Topicalisation		✓			
16. Syncretism of RECIPIENT	✓	✓	✓	✓	✓
17. Number of RECIPIENT	✓	✓	✓	✓	✓
18. Person of RECIPIENT	✓	✓	✓	✓	✓
19. Definiteness of THEME	✓	✓	✓	✓	✓
20. Definiteness of RECIPIENT	✓	✓	✓	✓	✓
21. Givenness of THEME	✓	✓	✓	✓	✓
22. Givenness of RECIPIENT	✓	✓	✓	✓	✓
23. Length Difference	✓	✓	✓	✓	✓
24. Pronominality of THEME	✓	✓	✓	✓	✓
25. Pronominality of RECIPIENT	✓	✓	✓	✓	✓
26. LogDice of THEME	✓	✓	✓	✓	✓
27. Source	✓	✓	✓	✓	✓

1. **Constructional variant** (IOC vs. POC). “IOC”: the Indirect Object Construction (with dative RECIPIENT) or “POC”: the Prepositional Object Construction (*an* + accusative RECIPIENT or *zu* + dative RECIPIENT).

2. **Order of THEME vis-à-vis RECIPIENT**. IOC and POC can occur with both orders in German. The possible levels are “IOC (T-R)”, “IOC (R-T)”, “POC (T-R)” and “POC (R-T)”. It should be kept in mind that with this constituent order I refer to the position of the THEME in relation to the RECIPIENT, it does not reflect the relative position of the verb vis-à-vis the THEME or the RECIPIENT, as I also included topicalised structures and subclauses in the datasets (cf. Section 2.6). With regard to the *geben* dataset the lack of data for IOC (T-R) and POC (R-T) attestations forced me to exclude the few sentences with these word orders – namely 33 IOC (T-R) and 2 POC (R-T) – from the analysis. Instead, I combined the factors Constructional variant and Order into one dependent variable Construction with two levels, viz. IOC with R-T order and POC with T-R order.

3. **Animacy of AGENT** (individual, collective, inanimate, non inferrable): “individual” (e.g., *Vater* ‘father’, *Zuschauer* ‘spectator’), “collective” (e.g., *Bund* ‘federation’, *Union* ‘union’ etc.) or “inanimate” (e.g., *Erfolg* ‘success’, *Arm* ‘arm’ etc.); “non inferrable” applies to passive sentences (100), imperatives (101) or subclauses without subject (e.g., infinitive clauses (102)). In passives, imperatives and infinitive clauses, the AGENT is commonly not expressed and not retrievable from the co(n)text, hence non inferrable. However, in cases where the co(n)text provided clues to determine the AGENT, it was annotated as either “individual”, “collective” or “inanimate”.

(100) *Daraufhin wurde <ihm> [das Radarfoto] geschickt.*

‘Then the radar photo was sent to him.’ UID 4631

(101) *Schickt <uns> bis 15. Juli [ein Foto von euch].*

‘Send us a picture of you by July 15th.’ UID 4629

(102) *Eine weitere Möglichkeit ist, <dem Fernseher> über eine DVD [ein weißes Vollbild] zu senden.*

‘Another option is to send a white full screen to the TV via a DVD.’ UID 6224

4. **Animacy of THEME** (animate, inanimate): “animate” (e.g., *Maria*, *Menschenaffen* ‘great apes’), “inanimate” (objects, e.g., *Studie* ‘study’, *Wissen* ‘knowledge’ or locations (e.g., *Fürstbistum Ermland* ‘Prince-Bishopric of Ermland’, *die Alpen* ‘the Alps’, *Grundstück* ‘plot of land’).

5. **Animacy of RECIPIENT** (individual, collective, inanimate, underspecified): “individual” (e.g., *Eigentümer* ‘owner’, *Räuber* ‘robber’), “collective” (e.g., *Partei* ‘party’),

Publikum ‘public’, *Verwaltung* ‘administration’, *Team*), “inanimate” (e.g., *Schulgeld* ‘tuition fee’, *Stahl* ‘steel’), “underspecified”. The label “underspecified” applies to NPs whose referent can be interpreted in multiple ways. For instance, *Gehirn* ‘brain’ and *Kopf* ‘head’ can refer to a location or an object, *Polizei* ‘police’ can refer to a location (the police station) or a collectivity (a group of police officers). *Zeitung* is underspecified with regard to the designation of a physical object, the information printed on it, a location where the paper is produced, or a collectivity (the people working at the newspaper). Even in specific utterances, reference may remain underspecified.

The view that the dative phrase in IOC normally encodes animate objects is well-established in the history of German grammar (Dal 1966: 41; Wegener 1985: 13-15, 166-168; Olsen 1997: 308-311; Zifonun et al. 1997: 1308-1312; Duden 2006: §1248-1253; Eisenberg 2006: 295-296). Conversely, PP in POC is considered largely neutral with regard to the animacy/inanimacy distinction (Zifonun et al. 1997: 1320-1321; Duden 2006: §1301). My dataset seems particularly suited to test the traditional association of IOC with Animacy. Whereas Bresnan and Ford (2010: 175) operationalise the factor Animacy of RECIPIENT, THEME in a binary way (“animate” being human or animal and “inanimate” the rest), I adopt a more fine-grained annotation with regard to animate RECIPIENT, viz. the differentiation between “individual” and “collective”. “Individual” applies to NPs with a human person as a referent, such as *dem Mädchen* ‘to the girl’, *an den Papst* ‘to the pope’. “Collective” applies to NPs that designate an organisation, a group or any other body of animate beings, e.g., *dem Team* ‘to the team’, *an das Personal* ‘to the staff’. The inanimate category is differentiated into “inanimate” for locatives and objects, and “underspecified” for locations that can be objects or vice versa and for any inanimate RECIPIENT that can also express a collectivity. This means that if the RECIPIENT is “underspecified”, it has a coded inanimate meaning, e.g., *der Stadt* ‘to the city’, *der Polizei* ‘to the police’, *an das Ministerium* ‘to the government department’, *an das Nationalblatt* ‘to the Nationalblatt’, *an die Banken* ‘to the banks’, but the NP can be interpreted as designating an animate collectivity metonymically or, more generally, by virtue of an implicature (e.g., *an das Ministerium* = ‘to representatives of the department, a person in charge’ etc.).

Animacy of RECIPIENT proved difficult to determine for certain instances. In order to evaluate the reliability of the annotation a random sample of 100 *schicken* and *senden* sentences was annotated by an independent annotator. Comparing both annotations by means of Cohen’s Kappa yielded a score of 0.85, which indicates a very good inter-annotator agreement.

6. **Concreteness of THEME** (abstract, concrete, propositional): “abstract” (= not perceptible with one of the five senses, e.g., *Gelegenheit* ‘opportunity’, *Chance* ‘chance’), “concrete” (= perceptible with one of the five senses; e.g., *Waffe* ‘weapon’, *Geld* ‘money’, *Signal* ‘signal’) or “propositional” (= conveying linguistic information, e.g., *Hinweise* ‘tips’,

Empfehlungen ‘recommendations’, *Auftrag* ‘assignment’, *Bericht* ‘message’). Note that “propositional” may be specifiable as a so-called “complex object” (Pustejovsky 1995: 91-92, 118 ‘info.physobj’, cf. Frisson 2015), i.e., the NP can either refer to a physical object or the information it contains (e.g., *ein briefliches Dementi* ‘a disclaimer in the form of a letter’) or it can refer to both. Related to the purpose of the study and for the sake of processability of the data, I use discrete categories for the factor Concreteness and abstain from operationalising Concreteness as a continuous variable that, for instance, measures the degree of concreteness of the NP on a scale by means of an ordered set of degrees of concreteness ranging from very concrete to very abstract. Nevertheless, some nouns may vary in concreteness and be more or less concrete depending on the context, compare (103) and (104), in which *Signale an den Kopf geben* is arguably understood more concretely than *Signal an die Welt geben*.

(103) *Der Körper gibt [Signale] <an den Kopf>.*

‘The body sends signals to the head.’ UID 3279

(104) *Wir wollen [ein Signal] <an die Welt> geben.*

‘We want to send a signal to the world.’ UID 3380

7. **Concreteness of RECIPIENT** (abstract vs. concrete): With regard to the RECIPIENT, too, “concrete” is defined as having a determinate physical appearance and size, e.g., things, groups (including groups of people, e.g., *Verein* ‘society’), bodies etc. which can be perceived with one of the five senses. This predictor was not included in the model for *schicken/send* because of scarcity of data (more specifically, there were insufficient attestations for the level “abstract”).

8. **Theme Idiom** (yes vs. no): Idiomatic expressions are understood as lexically conventionalised verb-THEME combinations whose meaning cannot be derived compositionally (e.g., *grünes Licht geben*, lit. ‘to give the green light’, which means ‘to give permission’). Regular phrasal verb constructions (e.g., *den Auftrag geben* ‘to assign a task’, *Hoffnung geben* ‘give hope’, *Vorrang geben* ‘give priority’, *Aufwind geben* ‘give impetus’ etc. (cf. Adler 2011: 70-73 for similar examples) are not classified as idioms because of their compositional transparency, i.e., their meaning can be explained by combining the meaning of the composing elements. The hallmark of such expressions is their relative formal and semantic stability. Non-alternating idioms were discarded. The possibility to alternate was additionally verified through Google searches (restricted to German websites). The observation of one occurrence was regarded as sufficient evidence for the possibility to alternate. However, although the factor Idiom was originally operationalised in the *geben*-dataset, it was not included in the *schicken/send* dataset nor in the complex datasets due to data scarcity.

9. **Metaphor** (yes vs. no): Metaphors are operationalised as expressions that are used figuratively, i.e., abstract concepts are designated by means of words referring to concrete objects; e.g., (105), (106) and (107):

(105) *Die Europäische Zentralbank (EZB) gab <den Banken> nochmals [eine Geldspritze über 7,7 Milliarden Euro].*

‘The European Central Bank (ECB) once again gave the banks an injection of 7.7 billion euros.’ UID 3908

(106) *Er wolle mit seiner Veranstaltung [einen Wink] <an die Gastronomen> geben.*

‘He says with his event he wants to give a hint to the restaurant owners.’ UID 3315

(107) *[Die Kirche] ist <zu den Menschen> gesandt.*

‘The church has been sent to the people.’ UID 6788

In (107) reference is made to a concrete sending event to express the abstract idea that the institute church has been founded to help the people. Also this factor was originally included in the *geben*-model, but eventually disregarded because of data scarcity in the *schicken/senden* dataset and the complex datasets.

10. **Propernounhood** of RECIPIENT (proper noun vs. common noun): “proper noun” (e.g., *Bundeskanzler Viktor Klima* ‘Federal Chancellor Viktor Klima’) or “common noun” (e.g., *Interessierten des Golfsports* ‘those interested in golf’).

11. **Denotational Class** (concrete, abstract, propositional): the denotational class is annotated as either “concrete”, e.g., (108), “abstract”, e.g., (109), or “propositional”, e.g., (110) and (111):

(108) *Schickt <uns> [eure Zeichnungen] bitte bis Samstag, 25. November.*

‘Please send us your drawings before Saturday, 25th November.’ UID 4522

(109) *Es sandte <mir> das Schicksal [frühen Schlaf].*

‘Fate sent me early sleep.’ UID 6182

(110) *Am Freitag werde er [die Anweisung] <an einen Zimmermann> geben, einen neuen Verband einzuziehen.*

‘On Friday, he would give the instruction to a carpenter to insert a new beam.’ UID 3633

(111) *Wer weitere Ideen hat, kann [diese] <an Helmut Dieth> senden.*

‘If you have further ideas, you can send them to Helmut Dieth’ UID 6041

For *geben*, this classification is in accordance with previous research of the semantics of *give*, e.g., Mukherjee (2005: 36), who distinguishes ‘giving’ (concrete and/or immediate transfer), ‘affect’ (abstract and/or non-immediate transfer), and ‘speaking’ (transfer of language). For similar annotations, cf. Bresnan et al. (2007: 85) “give.t ‘transfer sense’, give.c ‘communication sense’, and give.a ‘abstract sense’” and Bernaisch et al. (2014: 13). I also applied this threefold classification to the other noncomplex and complex verbs. I use the term Denotational Class rather than Verb Sense or Semantic Class, which have been common in research on alternating verbs. I avoid Verb Sense because the determination of the levels not only depends on the verb and its valency but on the interaction of the verb with the specific arguments and occasionally the adjuncts with which the verb is combined in the clause, and even the wider context of the utterance can play a role in the annotation. Second, I avoid Semantic Class in accordance with the distinction between semantics and pragmatics outlined in Chapter 3. Denotational Class is meant to evaluate the sense of an utterance in context rather than an encoded meaning on the level of the lexicon and grammar.

Although Denotational Class may coincide with Concreteness of THEME, cf. (112), this is not necessarily the case. For example, a concrete THEME can be coerced into a propositional sense (i.e., propositional denotational class) as e.g., in (113), or an abstract sense, e.g., (114), and an abstract THEME can be coerced into a propositional sense, e.g., (115). Recall that a propositional THEME is compatible with concrete transfer due to its complex ‘info.physobj’ character, as e.g., in (116), where *ein 5-seitiger Bericht* refers to a concrete written (printed) text submitted to the press, or (117), where *alle Informationen* are presumably primarily of an auditory nature.

- (112) *Auch dürfen sie [keinen Alkohol] vom Wagen <an die Zuschauer> geben.*
 ‘They are not allowed to give alcohol from the float to the audience.’ UID 3309
- (113) *Gegen die Stimmen der Sozialdemokraten gab der Rat <dem Projekt> [grünes Licht].*
 ‘Against the votes of the Social Democrats, the council gave the project the green light’
 UID 4255
- (114) *Und es hat <dieser Krankheit> [ein Gesicht] gegeben.*
 ‘And it has given this disease a face.’ UID 4286
- (115) *Und weiß, wie dieses Detail <einer Geschichte> [den entscheidenden Dreh] geben kann.*
 ‘And knows how this detail can give a story the decisive twist.’ UID 3726
- (116) *Die Staatsanwaltschaft hat [einen 5-seitigen Bericht] erstellt und <an die Presse> gegeben.*
 ‘The public prosecutor prepared a 5-page report and released it to the press.’ UID 4442

- (117) *Das würde dann aber bedeuten, dass Sie im Plenum [nicht alle Informationen] <an uns> gegeben haben.*

‘That would mean that you did not give us all information in the plenary.’ UID 4423

12. **Sense:** The assumption is that the IOC/POC alternation is associated with finer-grained semantic differences than the tripartite distinction between concrete, propositional and abstract with regard to the denotational class. This assumption is based on the observation that in dictionaries IOC appears more often as an example for certain senses than POC and vice versa (cf. *ausliefern* and *preisgeben* discussed in Section 5.3.1). Further differentiation based on all three arguments of each individual verb is called for.

For the *geben* dataset I had initially planned to annotate the factor Sense according to the four semantic domains and their extensions provided by Newman (1996). However, Newman’s categories “spatio-temporal”, “control”, “force-dynamics”, “human interest”, “interpersonal communication” and “permission/enablement” show much overlap, which makes them difficult to be operationalised in a coherent, intersubjectively replicable way. I therefore abandoned the attempt to proceed along the lines of Newman’s categories. I instead turned to the senses provided by *Digitales Wörterbuch der deutschen Sprache* (DWDS). However, this was again to no avail, because DWDS provides so many senses for the verb *geben* that a statistical analysis would not be possible, given that too many levels had to be distinguished. I therefore eventually decided not to annotate the factor Sense for the *geben* dataset due to reasons of feasibility.

For the verbs *schicken* and *senden*, DWDS only provides two senses, which is however too coarse-grained for the purposes of my analysis. In the *schicken* and *senden* dataset I distinguish nine senses, “A” to “I”. The nine senses partly overlap with the tripartite division of the preceding variable Denotational Class but introduce further differentiations. Sense A “**information-dual reference**” applies when both the content and the material form of the information are expressed, by means of lexical items such as *Zettel* ‘note’, *Rechnung* ‘bill’, *Prospekt* ‘prospectus’ etc.; both aspects of the information are equally relevant in the context of the sentence. By contrast, sense B “**information-content**” profiles the information’s content by means of words such as *Gruß* ‘greeting’, *Botschaft* ‘message’, *Warnung* ‘warning’. Designations of emotions such as *Liebe* ‘love’, *Geduld* ‘patience’, *Wärme* ‘warmth’ also belong to sense B “information-content”. Sense C “**object**” covers all literal sending of objects, such as *Proben* ‘samples’, *Geschenke* ‘gifts’, *Päckchen* ‘packages’. When persons are sent to persons, either for reasons of assistance, educational purposes, on a mission, e.g., to deliver a message to a person higher in rank, or to become a member of a group, sense D “**person**” applies. Sense E “**religious**” is very specific and involves the religious interpretation of a sending event. The AGENT is usually of a divine nature, e.g., God who sends his son to the people. In sense F “**meteorological**” the AGENT-like entity is a weather phenomenon such as *Tief Nancy* ‘low pressure area Nancy’, *die Sonne* ‘the sun’, *der Nordwestenwind* ‘the northwest wind’, while the THEMES are

Wolken ‘clouds’, *Schnee* ‘snow’, *Sonnenstrahlen* ‘sunbeams’ etc. Sense **G “financial”** concerns the sending of money (in various forms, including by deposit, bank transfer etc.); typical THEMES are *Geld* ‘money’, *Dollar*, *Schecks* ‘checks’. Sense **H “technical”** obtains when a technical device such as a sensor, a car or some other instrument transfers a signal or an impulse to another technical device. Sense **I “activity”** is observed in cases where someone’s behaviour sends a sign or signal to a mostly animate RECIPIENT.

In the complex datasets I adopted the levels for Sense from DWDS without further changes. The different uses of the complex verbs listed in the dictionary appeared to be sufficiently fine-grained. For example, with respect to the verb *verleihen*, DWDS distinguishes between three different senses: “auszeichnen” ‘honour’, “verborgen” ‘lend out’ and “verschaffen” ‘provide’. It is possible that certain senses of the verbs under study tend to be used with IOC while others mainly occur with POC. In Section 5.3.1 a qualitative preliminary study of two transfer verbs is carried out to explore this hypothesis.

Table 13 gives an overview of the different levels per complex verb.

Table 13 Senses in the complex dataset: DWDS sense

Verb	Sense	Example
Group complex –geben		
abgeben	“abordnen”	<i>Eine andere Möglichkeit ist es, [Aufgaben] <an ambulante Hilfsdienste> abzugeben.</i>
	‘delegate’	‘Another option is to delegate tasks to external services.’ UID 2997
	“abtreten”	<i>Sie gibt [ihr Ortsratsmandat] <an Ralf Scharringhausen> ab.</i>
	‘relinquish’	‘She is relinquishing her local council mandate to Ralf Scharringhausen.’ UID 2966
	“aushändigen”	<i>[Problemstoffe] sind <dem Sammelorgan> abzugeben.</i>
	‘hand over’	‘Problem substances are to be given to the collecting member.’ UID 3007
	“mitteilen”	<i>Der Ausschuss gibt <dem Fakultätsrat> [eine Empfehlung] ab.</i>
	‘communicate’	‘The committee makes a recommendation to the faculty board.’ UID 3035
	“schenken”	<i>Als Fahrer musste er [60 Prozent seiner Einnahmen] <seinem Arbeitgeber> abgeben.</i>
	‘give’	‘As a driver, he had to give up 60 percent of his take to his employer.’ UID 3014
preisgeben	“Sport”⁵²	<i>Ganz knapp musste Helga Mrotzek im dritten Satz [ihr Spiel] <an den Gegner> abgeben.</i>
		‘Helga Mrotzek very closely conceded to the opponent in the third set.’ UID 2950
	“verkaufen”	<i>Der Blutspendedienst gibt [das Blut] dann zu fairen Preisen <an die Krankenhäuser> ab.</i>
	‘sell’	‘The blood donation service then delivers the blood to the hospitals at fair prices.’ UID 2947
	“aufgeben”	<i>Es fällt auch auf, dass CVP und FDP [den vakanten Sitz] <an die SVP> preisgeben.</i>
	‘give away’	‘It is also noticeable that CVP and FDP have left the vacant seat to the SVP.’ UID 3040
	“überlassen”	<i>Besser wäre es, [die NPD] <der Lächerlichkeit> preiszugeben.</i>

⁵² The descriptive terms for the senses are based on the entries in DWDS. The main verb that appears in the paraphrase is taken as the sense description, unless DWDS does not provide a paraphrase but only an example, in which case a descriptive substantive or adjective is chosen.

	‘expose’	‘It would be better to expose the NPD to ridiculousness.’ UID 3067
	“verraten”	<i>Haben sie Sorge, dass sie [ihre Geheimnummern] <an einen Betrüger> preisgegeben haben, sollten sie sofort ihr Konto sperren lassen.</i>
	‘disclose’	‘If you are concerned that you have disclosed your secret codes to a fraudster, you should have your account blocked immediately.’ UID 3045
übergeben	“anvertrauen”	<i>Er übergab [sein Amt] <an Frank Berssem>.</i>
	‘entrust’	‘He entrusted the function to Frank Berssem.’ UID 2443
	“aushändigen”	<i>Dort übergebe ich <dem Gewinner der Kartoffelpass-Aktion> [seinen Preis].</i>
	‘hand over’	‘There I am handing the winner of the potato-pass campaign his prize.’ UID 2560
	“ausliefern”	<i>[Er] wurde festgenommen und <den zuständigen Stellen> übergeben.</i>
	‘extradite’	‘He was arrested and extradited to competent authorities.’ UID 2291
	“freigeben”	<i>Denn heute, Samstag, wird [der Bau] offiziell <seiner Bestimmung> übergeben.</i>
	‘enable’	‘Because today, Saturday, the building is being officially inaugurated.’ UID 2412
weitergeben	“delegieren”	<i>Nach elf Jahren gibt Monika Krist [ihre Aufgaben] <an Kerstin Stier> weiter.</i>
	‘delegate’	‘After eleven years, Monika Krist is passing on her tasks to Kerstin Stier.’ UID 2762
	“durchgeben”	<i>Der Briefträger nimmt das Geld in Empfang und gibt [es] <an den Zoll> weiter.</i>
	‘pass on’	‘The postman receives the money and passes it on to customs.’ UID 2764
	“weitererzählen”	<i>Nun gibt sie [ihr Wissen] <an junge Menschen> weiter.</i>
	‘retell’	‘Now she is passing on her knowledge to young people.’ UID 2760
	“weiterreichen”	<i>[Die restlichen Romane] sollen nun <an die Bürstädter Tafel> weitergegeben werden.</i>
	‘pass on’	‘The remaining novels are now to be passed on to the Bürstädter Tafel.’ UID 2850
zurückgeben	“mündlich”	<i>Hans-Peter Schnurrer gab [das Lob] zurück <an die Klosterneuburgerinnen>.</i>
	‘oral’	‘Hans-Peter Schnurrer praised the (female) inhabitants of Klosterneuburg back.’ UID 2696
	“wiedergeben”	<i>[Ein Teil der Beute] konnte <den ursprünglichen Besitzern> zurückgegeben werden.</i>
	‘give back’	‘Part of the loot could be returned to the original owners.’ UID 2572

Group complex -schicken and -senden

übersenden	“senden, schicken” ‘send’	<i>Der Südamerikaner übersandte <ihm> 2002 [eine Übersicht].</i> ‘The South American sent him an overview in 2002.’ UID 1800 <i>Oberbürgermeister Eckart Würzner hat [Weihnachtsgrüße] <an die Besatzungen eines Flugzeugs, Containerschiffs und Schnellzugs> übersandt.</i> ‘Mayor Eckart Würzner sent Christmas greetings to the crews of an airplane, a container ship and an express train.’ UID 1716
einschicken	“zuständige Stelle” ‘competent authority’	<i>Es müssen <uns> [zehn Eier] eingeschickt werden.</i> ‘Ten eggs have to be sent in to us.’ UID 1195 <i>Sie haben [einige einfache Fragen] beantwortet und <an uns> eingeschickt.</i> ‘They answered some simple questions and sent them to us.’ UID 1348
einsenden	“einsenden” ‘send in’	<i>Leserinnen und Leser können [Vorschläge] <an die RLZ-Redaktion> einsenden.</i> ‘Readers can send suggestions to the RLZ editorial team.’ UID 1669
weeterschicken	“jemanden wegschicken” ‘send away sby’	<i>[Kein Versicherter] werde <an andere gesetzliche Kassen> weitergeschickt, teilten die Kassenverbände nach einem Krisentreffen mit.</i> ‘No insured person will be forwarded to other statutory health insurers, the health insurance associations said after a crisis meeting.’ UID 7272
	“zugesandtes wegschicken” ‘send away sth’	<i>Doch die winkte ab und schickte [diese Akten] weiter <an die Münchner Kollegen>.</i> ‘But she waved it off and sent the files on to her Munich colleagues.’ UID 7202
zurückschicken	“begeben” ‘go to’	<i>Manfred Gogol hatte [den Rentner] zur Nachoperation zurück <an die MHH> geschickt. (MHH= Medizinische Hochschule Hannover)</i> ‘Manfred Gogol had sent the pensioner back to the MHH for follow-up surgery. (MHH = Hannover Medical School)’ UID 1480
	“wieder Ausgangsort”	<i>[Auch ausgediente Flaggen] schickt er zurück <an den Bundestag>.</i> ‘He also sends disused flags back to the Bundestag.’ UID 1403

	‘back to point of departure’	
zurücksenden	“begeben”	<i>Der König ermordete seinen Sohn und sandte [ihn] in Stücken <an seine Mutter> zurück.</i> ‘The king murdered his son and sent him back to his mother in pieces.’ UID 1944
	“wieder Ausgangsort”	<i>“Ich habe <ihr> [einen kurzen Gruß] zurückgesandt”, berichtet er cool.</i> “‘I sent her back a short greeting,” he reports coolly.’ UID 1986
<hr/> Group ausleihen, verleihen, verkaufen		
ausleihen	“leihen”	<i>[Diese Technik] wird <an andere Forstämter> ausgeliehen.</i>
	‘lend’	‘This technology is lent out to other forest offices.’ UID 798
	“leihen Fußball”	<i>[Jönsson] ist bis zum Sommer <an den Zweitligisten> ausgeliehen.</i>
	‘lend football’	‘Jönsson is on loan to the second division team until summer.’ UID 759
	“leihen Geld”	<i>Die Raiba lieh [insgesamt 235,5 Millionen Mark] <an ihre Kunden> aus.</i>
	‘lend money’	‘Raiba lent out a total of 235.5 million marks to its customers.’ UID 689
verleihen	“auszeichnen”	<i>Er war nicht der Einzige, <dem> [dieser Titel] verliehen wurde.</i>
	‘honour’	‘He was not the only one to be given this title.’ UID 837
	“verborgen”	<i>[Cigerci] ist seit Januar 2012 bis zum Saisonende <an Mönchengladbach> verliehen.</i>
	‘lend out’	‘Cigerci has been lent out to Mönchengladbach from January 2012 to the end of the season.’ UID 931
	“verschaffen”	<i>Zahlreiche schöne Bauernhäuser verleihen <dem Dorf> [sein Gepräge].</i>
	‘provide’	‘Several beautiful farmhouses give the village its character.’ UID 836
verkaufen	“Meinung”	<i>Designerin Vivienne Westwood will <uns> [diese Fusion einer Tulpe mit einem Lollipop] tatsächlich als Kleid verkaufen.</i>
	‘opinion’	‘Designer Vivienne Westwood actually wants to sell us this fusion of a tulip with a lollipop as a dress.’ UID 111
	“Zahlung Summe”	<i>Ein Bekannter verkaufte <mir> [seine Kamera] für den sprichwörtlichen Apfel und ein Ei.</i>
	‘payment sum’	‘An acquaintance sold me his camera for the proverbial arm and a leg.’ UID 38

13. **Verb** (*abgeben, ausleihen, einschicken, einsenden, geben, preisgeben, schicken, senden, übergeben, übersenden, verkaufen, verleihen, weitergeben, weiterschicken, zurückgeben, zurückschicken, zurücksenden*).

14. **Voice** (active vs. passive). Active voice, cf. (118), characterises a sentence in which the AGENT performs the action stated by the verb, whereas in passive sentences, cf. (119), the AGENT is usually omitted:

(118) *Diese Rezeptoren senden [Schmerzsignale] <an unser Gehirn>.*
'These receptors send pain signals to our brain.' UID 6976

(119) *Daraufhin wurde <ihm> [das Radarfoto] geschickt.*
'Subsequently, the radar photo was sent to him.' UID 4631

15. **Topicalisation** (no, THEME, REC). Topicalisation has a bearing on sentences in which either the RECIPIENT or the THEME is moved to sentence initial position, as in (120):

(120) *<Bekannten> schickt er [SMS, die mit "heil" enden].*
'To acquaintances he sends SMS messages ending with "heil".' UID 4515

This factor was neither annotated in the *geben* dataset nor in the complex datasets due to data scarcity. However, it was annotated in the *schicken/senden* dataset because I wanted to verify certain claims concerning constituent order with regard to these two verbs in previous research (e.g., Wegener 1985; Duden 2006) (cf. Section 6.1).

16. **Syncretism of RECIPIENT** (explicit vs. non-explicit). Morphological explicitness concerns the morphological appearance of the RECIPIENT: because plural pronouns such as *uns* and *euch* are syncretic forms, the argument is non-explicit, unless an additional preposition is used. Similarly, proper nouns such as *Charles Darwin* and *Lufthansa* have no overt case marking and are therefore non-explicit.

17. **Number of RECIPIENT** (singular vs. plural): "singular" (e.g., *dem Partner* 'to the partner'), "plural" (e.g., *seinen Kindern* 'to his children').

18. **Person of RECIPIENT** (local vs. non-local). Local person refers to the first and second grammatical person, non-local to third person.

19. **Definiteness of THEME** (definite vs. indefinite): "definite" for e.g., *die Hauptrolle* 'the lead role', *sein Hochzeitsbild* 'his wedding picture', "indefinite" for e.g., *eine Spende* 'a donation', *Hinweise* 'tips'.

20. **Definiteness of RECIPIENT** (definite vs. indefinite): “definite” (e.g., *ihre Ideen* ‘her ideas’, vs. “indefinite” (e.g., *Hilfe* ‘help’).

21. **Givenness of THEME** (given, accessible, new): givenness⁵³ is not a discrete category, there are different degrees to which information is available (cf. Gundel 2003 for discussion). I annotated the data in a ternary way: “given”, “accessible”, “new”. “Given” encompasses the cognitive status “activated” in Gundel et al.’s (1993: 275) Givenness Hierarchy. Information is “accessible” if it is recoverable from the preceding context. “New” information is either “nonrecoverable because introduced for the first time into the discourse” or “already present in the discourse, but newly identified” (Collins 1995: 42). Whenever possible, I extracted up to 80 sentences of preceding context from DeReKo in order to establish the givenness status.

22. **Givenness of RECIPIENT** (given, accessible, new): similar to Givenness of THEME, if the RECIPIENT conveys information that is in focus in the preceding text, it is annotated as “given”, otherwise it is either “accessible” or “new”. Information can be “given” even though it has not explicitly been mentioned by means of the words to which the givenness label applies. This holds for RECIPIENT and THEME alike. For example, in (121) *dem Reisenden* ‘to the traveller’, contains given information to the extent that it is coreferential with *den Leser* ‘the reader’ in the preceding sentence (in bold). Coreferentiality is also triggered by the noun *Reisetipps* ‘travel tips’ in the same sentence.

(121) *Mit schönen Bildern, aktuellen Reportagen und nützlichen Reisetipps führt die neue Ausgabe Kanada Osten, DuMont, 8,50 Euro, **den Leser** durch die atemberaubende Region im Osten Kanadas. Ausgewählte Aktivangebote geben <dem Reisenden> [die Möglichkeit, das Urlaubsziel auf eigenen Wegen zu erkunden].*

‘With its beautiful photographs, relevant reports and useful travel tips, the new issue of Canada East, DuMont, 8.50 Euro, guides the reader through the breath-taking region in the East of Canada. Selected offers in terms of active holidays give the traveller the opportunity to explore his holiday destination in his own way.’ UID 3915

Conversely, lexical similarity or (partial) lexical reiteration does not automatically entail given information. In (122), although the information provided in THEME *alle Voten* ‘all votes’ is introduced by means of *das Papier beraten* ‘discuss the paper’ in the preceding sentence (in bold), the THEME does not qualify as given. It is annotated as “accessible”.

⁵³ In this dissertation, only referential givenness was annotated, not relational givenness. Referential givenness is “a relation between a linguistic expression and a corresponding non-linguistic (conceptual) entity in (a model of) the speaker/hearer’s mind” (Gundel 2003: 125; cf. Gundel and Fretheim 2004: 176; cited in Belligh 2018: 32). Factors involved in referential givenness, including definiteness and pronominality, were treated as separate factors.

- (122) *Das Bistum Hildesheim will in Salzgitter vier katholische Kirchen schließen und dazu die St.-Martin-Kirche in Lutter, die zur Pfarrei Salzgitter-Bad zählt. Bedroht ist auch die St.-Josef-Kirche in Liebenburg. Pater Ludger Wolfert, zurzeit stellvertretender Dechant des katholischen Dekanats Goslar-Salzgitter, bestätigt der SZ, dass alle betroffenen Gemeinden gestern informiert worden seien. Kirchenvorstände und Pfarrgemeinderäte sollten **das Papier** nun **beraten**: „Es ist eine Verwaltungsvorlage. Beschlossen ist noch nichts.“ In einer Dekanatskonferenz vor Ostern sollen [alle Voten] zusammengetragen und <an das Bistum> gegeben werden.*

‘The diocese of Hildesheim wants to close four catholic churches in Salzgitter as well as the St. Martin Church in Lutter, which belongs to the parish of Salzgitter-Bad. The St. Jozef Church in Liebenburg is also under threat. Father Ludger Wolfert, currently deputy dean of the catholic Dean’s Office in Goslar-Salzgitter confirmed to SZ that all affected communities were informed yesterday. Church leaders and parish councils should now discuss the paper: “It is an administrative bill. Nothing has been decided yet.” In a deanery conference before Easter, all votes will be gathered and given to the diocese.’
UID 3158

Note that Givenness is independent of Definiteness. In (123), *an eine einzige Firma* ‘to a single firm’ is indefinite but nevertheless given because it has been introduced in the preceding sentence as *(die) Firma Gerd Käfer (München)* ‘the firm Gerd Käfer (Münich)’ (in bold):

- (123) *Ein wichtiges Thema der Aufsichtsratssitzung war die Zukunft der Gastronomie der Alten Oper. Hocks erläuterte den Stand der Verhandlungen **mit der Firma Gerd Käfer (München)**; ein weit gediehener, aber noch nicht in allen Punkten unterschriftsreifer Vertragsentwurf liegt inzwischen vor. Der Aufsichtsrat stimmte grundsätzlich dem Konzept zu, [die Gastronomie des Hauses] exklusiv <an eine einzige Firma> zu geben.*

‘An important issue in the board meeting was the future of the catering in the “Alte Oper”. Hocks explained the status of the negotiations with the firm Gerd Käfer (Münich); meanwhile an already advanced draft contract exists, but it is not yet in all respects ready to be signed. In general, the supervisory board agreed to the concept of giving the catering of the house exclusively to a single firm.’ UID 3692

The distinction between the information status “in focus” and “activated” is graded, and so is the distinction between “new” and “identifiable”, (cf. Gundel 2003). As I focus in this study on the factor Givenness in relation to a specific constructional alternation, I prefer to operationalise the factor as a ternary one, which however does not mean that “given”, “accessible”, and “new” are conceived as monolithic categories.

23. **Length Difference** is operationalised as length of RECIPIENT in number of words (excluding the preposition *an*) minus length of THEME in number of words. In many instances these constituents are discontinuous, with the verb separating a NP and a modifying subordinate clause. In those cases, both parts of the constituent were used to calculate its length. Subordinate clauses are either finite (124) or non-finite (125):

- (124) *Dünnebier hat [seine Vorschläge] bereits <an das Planungsbüro> gegeben, <<das den Lampertheimer Verkehrsentwicklungsplan aufstellt>>.* (length RECIPIENT = 7)

‘Dünnebier has already given his proposals to the planning office that is preparing the traffic development plan for Lampertheim.’ UID 3174

- (125) *Man wollte <den Anhängern> [die Möglichkeit] geben, [[die Einrichtung des Lokals mitzugestalten]].* (length THEME = 7)

‘They wanted to give the supporters the opportunity to help with the interior design of the room.’ UID 4343

By contrast, if the subordinate clause is separated from the NP by the other object, as in (126), I only counted the first part of RECIPIENT OR THEME:

- (126) *Er gab [den Auftrag] <an eine Gießerei>, den Nachguss anzufertigen.* (length THEME = 2)

‘He commissioned a foundry to make the cast.’ UID 3672

24. **Pronominality of THEME** (nominal vs. pronominal): “nominal” (e.g., *Prioritätslisten* ‘priority lists’) and “pronominal” (e.g., *alle* ‘all’, *diese* ‘these’, *es* ‘it’, *ihn* ‘him’).

25. **Pronominality of RECIPIENT** (nominal vs. pronominal): “nominal” (e.g., *der Mannschaft* ‘to the team’, *an das Blatt* ‘to the paper’) or “pronominal” (e.g., *ihm* ‘him’, *an ihn* ‘to him’).

26. **THEME Collocation:** (high, low, no). This factor indicates the collocation strength of verb and THEME according to the logDice for the 100 most important collocations (cf. *Digitales Wörterbuch der deutschen Sprache* (DWDS)). Not all lexical items represented in the data are listed in the DWDS frequency lists. I was, for instance, able to annotate 605 of the 1343 THEMES for *schicken* and 717 of the 1346 for *senden*. I found logDices ranging from 10.5 to 3.5. They indicate a stable, non-corpus-specific association score between the lexical item and the verb (cf. Rychlý 2008). The theoretical maximum is 14. Comparing two scores, plus 1 point means twice as often collocation. Scores up to 7 were annotated as ‘high’, lower than 7 as ‘low’.

27. **Source** (D (Germany), CH (Switzerland), AT (Austria), W (Wikipedia)). This variable is included in the models to evaluate possible regional differences. However, it is important to keep in mind that it is common practice for German language newspapers to borrow news and messages from news agencies located across the German speaking world. Unfortunately, it is not possible to determine how frequent such borrowings actually are in the corpus, but it must be kept in mind that we have to regard this variable with caution when applying it as a proxy for macro-regional differences in the statistical models.

Syntactic priming. As a final note regarding my data annotation, it bears pointing out that I did not annotate whether the same construction was used in the previous context, a phenomenon variously termed ‘syntactic priming’, also termed ‘structural parallelism’ or ‘syntactic persistence’ (Bock 1986; Pickering et al. 2002; Gries 2005; Szmrecsanyi 2006; Bresnan and Ford 2010) (cf Section 1.2.5), and which may have a significant impact on the realisation of the variants. The reason that the factor was not annotated is that the preceding context is often lacking in the corpus (e.g., when the token is the first sentence of an article or when the “preceding context” is at best information contained in a previous edition of the newspaper, which however is not available). The preceding context is often also too impoverished to contain any priming structure.

4.3 Statistical modelling

Each analysis in the case studies below follows the following steps. First the sample distribution of IOC vs. POC is examined in relation to the THEME-RECIPIENT constituent order and the sentence verbs under analysis. A chi-squared test and associated measures (Cramér’s V and standardised residuals) are used to evaluate these bivariate relationships. Then, the association between the constructional alternation (IOC vs. POC) and the variables under analysis is evaluated by means of multifactorial statistical analyses, including: penalised logistic regression, mixed effects logistic regression and conditional inference trees. It is safe to say that these modelling tools have now become standard practice in contemporary corpus-based approaches to alternating syntactic constructions (cf. De Cuyper et al. 2017). We refrained from using more sophisticated high-end ensemble learning models (e.g., adaptive boosting, random forests). While the latter may arguably yield better classification scores, they are notoriously difficult to interpret, given their “black box” algorithms. As is presented in more detail below, the fitted models already yield very good to excellent prediction qualities, so we are confident that more complicated models would not add to our understanding of the data, even if they would yield higher prediction scores. We aim to understand, rather than to “blindly” predict.

With respect to model building of the (mixed effects) logistic regression models, we fit multiple models for each case study, but we nevertheless follow a rather minimalist approach to model building. Following Frank Harrell’s advice against extensive variable selection (e.g., Harrell 2015: 67-72), we neither use stepwise procedures nor attempt to estimate the minimally adequate model (i.e., a model that only includes significant variables). We fit maximal models retaining non-significant variables (significance level = 5%) and include interactions that seem theoretically worthwhile (e.g.,

Verb*ThemeLogDice and Verb*Sense because it is possible that ThemeLogDice or Sense have a different effect depending on the Verb). Unfortunately, the datasets are not sufficiently large to test all two-way interactions. Extremely skewed binary variables are excluded from the final models.

All categorical factors are dummy coded. Length Difference is fitted by means of a restricted cubic spline function to allow for non-linearity. To reduce potential overfitting, we apply penalisation. Bootstrap evaluation of prediction accuracy based on the C-index is mainly used to evaluate model quality. Variable importance is measured by means of ANOVA tests of nested models. Effect plots with predicted probabilities are used to illustrate and interpret variable effects.

A mixed effects model is used for the complex *-geben* case study, where we use a random effect for the variable Sense, because a logistic regression model with Sense as a fixed factor fails to converge. Conditional Inference Trees (CIT) are additionally used to explore the data in more detail. More specifically, CITs are used to explore subgroups based on each verb separately. For this subgroup analysis, all observations are retained (i.e., no resampling was performed as for the logistic regression analysis). The latter is allowed because the preferences of each verb are not compared in the subgroup analysis, only the effects of the other variables. An important reason to choose CITs is their versatility in the presence of unbalanced data. For technical reasons which go beyond the scope of the present work, we use CITs rather than the more classical classification tree algorithms (e.g., CART). One important reason is that CITs are less prone to overfitting the data. We visualise the tree to interpret the results and present the correct within-sample prediction rate as a quality measure. The same options for tree building are used (except for one reported below) and no extra pruning is performed (apart from the default p-value used by the algorithm); the tree growth limit is set at a max depth of 4.

All statistical analyses are performed in R (R Core Team 2019). The following packages are used (in alphabetical order): car (Fox and Weisberg 2019), dplyr (Wickham et al. 2019), effects (Fox 2003), Hmisc (Harrell et al. 2019), lme4 (Bates et al. 2015), optimx (Nash and Varadhan 2011; Nash 2014), and rms (Harrell 2019).

Chapter 5 Case studies

5.1 *Geben*

5.1.1 Corpus distribution of the alternation

The occurrence of the IOC/POC alternation with the verb *geben* is presented in Table 14, which displays the frequencies obtained from the four separate random samples described in section 4.1. Strikingly, only 85 out of 400 attestations with the verb *geben* qualify for the calculations, as *geben* is mainly used monoton transitively (e.g., in the existential construction *es gibt*), which already followed from the two random samples presented in Table 4. Moreover, Table 14 shows that *geben* is extremely rarely used directionally (1% of the 85 attestations, a case of *geben an* in a recipe), and rarely observed in *an*-POC⁵⁴ (4% of the 85 attestations, which is 5% of all ditransitive uses (cf. Table 15)) and never in *zu*-POC. Recall that I use the broad, typological definition of ditransitive in which the formal manifestation of the arguments does not play a role (cf. Section 2.2) so that both IOC and (non-directional) *an*-POC qualify as ditransitive. The typologically inspired definition I use does not include the directional uses because it restricts the third argument of a ditransitive construction to RECIPIENT-like instantiations.

Table 14 IOC/POC proportions in the *geben* dataset

IOC	<i>an</i> -POC	<i>zu</i> -POC	directional	total
80 (94%)	4 (5%)	0 (0%)	1(1%)	85 (100%)

Table 15 Proportions of the ditransitive uses of *geben*

IOC	<i>an</i> -POC	total
80 (95%)	4 (5%)	84 (100%)

⁵⁴ As will be explained below, under the label *an*-POC only the (potentially) alternating cases are listed, not the directional uses.

Table 15 shows the real proportions if only the ditransitive uses of *geben* are taken into account. The results show that the IOC/POC alternation with *geben* exists, although POC uses are rare.

5.1.2 Constituent order

As described in Section 2.6, according to standard German grammar, the unmarked constituent order of IOC is RECIPIENT-THEME (R-T), whereas THEME-RECIPIENT (T-R) is the unmarked order of POC. The findings support this claim, cf. Table 16.

Table 16 Constituent order in the *geben* dataset

	IOC	POC	total
R-T	690 (52%)	2 (0.1%)	692
T-R	33 (2%)	611 (46%)	644
total	723	613	1336

($X^2 = 1198$, $df = 1$, $P\text{-value} < 0.0001$, Cramér's $V = 0.95$)

POC with R-T order only occurs twice, in (127) with an exceptionally long THEME and in (128) with a relative clause, in which the relative pronoun is RECIPIENT.

- (127) *Bei dem Song “The Girl From Ipanema”* *gab*
 at the song “The Girl From Ipanema” *give.IPFV.3SG*
Gitarrist Hugo Fuchs *<an das Publikum>* *[die Empfehlung:*
 guitar player Hugo Fuchs.NOM to the.ACC audience the.ACC recommendation
“Stellen Sie sich vor, Sie wären in der Karibik am Strand mit einem Cocktail in der Hand”].
“Imagine that you were in the Caribbean at the beach with a cocktail in the hand”
 ‘Regarding the song “The Girl from Ipanema”, guitar player Hugo Fuchs gave the recommendation to the audience: “Imagine that you are in the Caribbean at the beach with a cocktail in your hand.”’ UID 3179
- (128) *Das war eine Idee des Landschaftsarchitekten,* *<an den>* *wir*
 that was an idea of the landscape architect to who.ACC we.NOM
[den Auftrag] *gegeben* *hatten.*
 the.ACC order give.PTCP have.IPF.1PL
 ‘That was an idea from the landscape architect, to whom we had given the order.’ UID 4465

The 33 instances of constituent order T-R with IOC are observed in sentences with passive voice in which THEME is the subject (129), in topicalised structures (130), in sentences with

pronominal THEMES (131), and in sentences with a specific information structure (for further examples and their frequencies, see the Appendix) .

- (129) *[Die Waffe] war <dem Buben> von den Eltern*
the.ACC weapon be.IPFV.3SG the.DAT boy by the.DAT parents
gegeben worden, um seine drei Brüder zu schützen.
give.PTCP be.PASS.INF in order to protect his three brothers
‘The weapon had been given to the boy by his parents in order to protect his three brothers.’ UID 3999

- (130) *[Schuld] geben die Wissenschaftler*
accusations.ACC give.PRS.3PL the.NOM scientists
<der Beschleunigung unseres Lebens im digitalen Zeitalter>.
the acceleration of our lives in the digital era.DAT
‘The scientists blamed the acceleration of our lives in the digital era.’ UID 3932

- (131) *Die Frau packte 215 Euro in eine Tüte*
the.NOM woman wrap.IPFV.3SG 215 Euro into a.ACC bag
und gab [sie] <dem Mann>.
and give.IPFV.3SG she.ACC the.DAT man
‘The woman wrapped 215 Euro into a bag and gave it to the man.’ UID 3741

In the dataset and analysis below, the marked constituent orders have been excluded, whereas in my (oversampled) dataset, the distribution of the two unmarked constituent orders is fairly even, with 690 (53%) and 611 (47%) observations respectively (percentages based on the dataset with the binary outcome only, i.e., 1301 observations).

5.1.3 Statistical analysis

Based on the logistic regression model⁵⁵ (cf. Table 17), there is evidence the IOC/POC alternation is associated with 13 predictors. These are, in order of importance (based on an ANOVA of nested models, cf. Figure 12: (1) Animacy of RECIPIENT, (2) Givenness of RECIPIENT, (3) Concreteness of THEME, (4) Length Difference, (5) Givenness of THEME, (6) Denotational Class, (7) Animacy of AGENT, (8) Source, (9) Person of RECIPIENT, (10)

⁵⁵ Based on the `penalize()` function in the `rms` package we found an optimal penalty of 0.03, which was deemed to be low to be included in the model. Model diagnostics indicate an excellent model fit. The bias-corrected C-index equals 0.95 (based on 2000 bootstrapped samples). There is some mild collinearity between `DenoClass` (Denotational Class) and `ThemeConc` (Concreteness of THEME) (VIF of Propositional `DenoClass` equals 17 and VIF of `ThemeConc`=propositional equals 19). See Appendix A for more model diagnostics.

Pronominality of RECIPIENT, (11) Voice, (12) Pronominality of THEME, (13) Propernounhood of RECIPIENT.

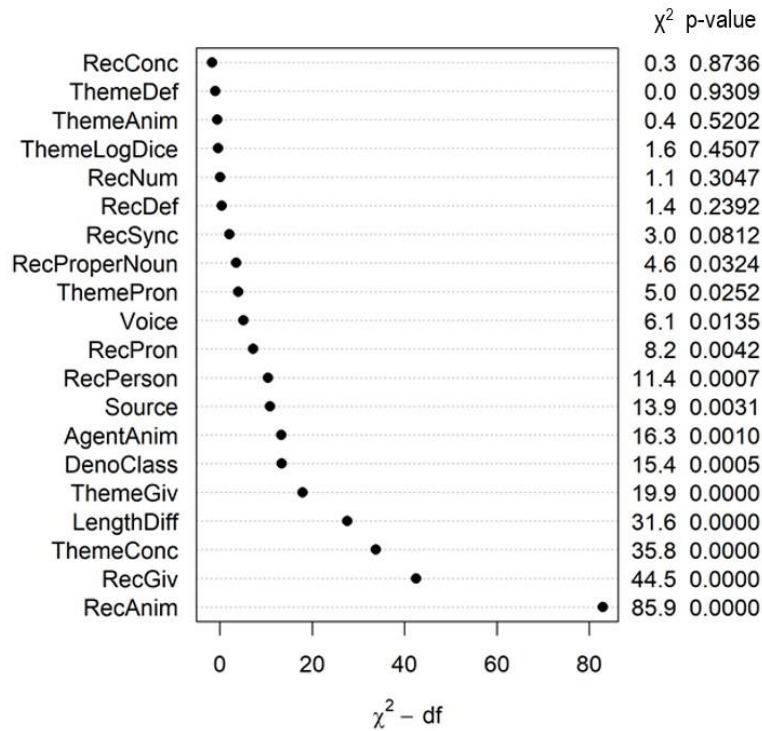


Figure 12 Ranking of apparent importance of predictors based on ANOVA of nested models⁵⁶

Table 17 The *geben* model

Logistic Regression Model

```
lrm(formula = Cx ~ Source + Voice + DenoClass + AgentAnim + ThemePron +
  ThemeGiv + ThemeAnim + ThemeDef + ThemeConc + ThemeLogDice +
  RecPron + RecGiv + RecAnim + RecDef + RecConc + RecPerson +
  RecSync + RecNum + RecProperNoun + rcs(LengthDiff), data = geben,
  x = TRUE, y = TRUE)
```

		Model Likelihood		Discrimination		Rank Discrim.	
		Ratio Test		Indexes		Indexes	
Obs	1336	LR chi2	1168.21	R2	0.779	C	0.960
IOC	723	d.f.	35	g	5.477	Dxy	0.920
POC	613	Pr(> chi2)	<0.0001	gr	239.085	gamma	0.920
max deriv	0.007			gp	0.458	tau-a	0.457
				Brier	0.079		
		Coef	S.E.	wald Z	Pr(> Z)		
Intercept		-0.7648	1.8394	-0.42	0.6776		
Source=CH		-0.2273	0.4610	-0.49	0.6219		
Source=D		0.8313	0.2935	2.83	0.0046		
Source=W		11.7088	25.1764	0.47	0.6419		

⁵⁶ The following abbreviations are used: RecConc = Concreteness of RECIPIENT, ThemeDef = Definiteness of THEME, ThemeAnim = Animacy of THEME, ThemeLogDice = Collocation Strength of THEME and verb, RecNum = Number of RECIPIENT, RecDef = Definiteness of RECIPIENT, RecSync = syncretism of RECIPIENT, RecProperNoun = Propernounhood of RECIPIENT, ThemePron = Pronominality of THEME, RecPron = Pronominality of RECIPIENT, RecPerson = Grammatical Person of RECIPIENT, AgentAnim = Animacy of AGENT, DenoClass = Denotational Class, ThemeGiv = Givenness of THEME, LengthDiff = Length Difference, ThemeConc = Concreteness of THEME, RecGiv = Givenness of RECIPIENT, RecAnim = Animacy of RECIPIENT.

Voice=passive	1.8606	0.7528	2.47	0.0135
DenoClass=concrete	1.4212	0.4998	2.84	0.0045
DenoClass=propositional	-0.6647	0.8110	-0.82	0.4124
AgentAnim=indv	-0.9280	0.2570	-3.61	0.0003
AgentAnim=ninf	-1.1719	0.6817	-1.72	0.0856
AgentAnim=innm	-1.4013	0.4914	-2.85	0.0044
ThemePron=pronominal	1.2623	0.5639	2.24	0.0252
ThemeGiv=acc	0.0731	0.2914	0.25	0.8020
ThemeGiv=new	-0.9215	0.2580	-3.57	0.0004
ThemeAnim=innm	-0.5958	0.9265	-0.64	0.5202
ThemeDef=indefinite	-0.0194	0.2235	-0.09	0.9309
ThemeConc=concrete	2.7617	0.5379	5.13	<0.0001
ThemeConc=propositional	4.7346	0.8627	5.49	<0.0001
ThemeLogDice=high	-0.2407	0.3966	-0.61	0.5440
ThemeLogDice=low	0.2034	0.2272	0.90	0.3705
RecPron=pronominal	-1.2641	0.4415	-2.86	0.0042
RecGiv=acc	1.2954	0.2864	4.52	<0.0001
RecGiv=new	1.5646	0.2514	6.22	<0.0001
RecAnim=indv	-1.6745	0.2733	-6.13	<0.0001
RecAnim=undr	0.7654	0.3129	2.45	0.0144
RecAnim=innm	-2.4706	0.4267	-5.79	<0.0001
RecDef=indefinite	0.3958	0.3363	1.18	0.2392
RecConc=concrete	0.6283	1.2229	0.51	0.6074
RecConc=propositional	-6.4368	89.0751	-0.07	0.9424
RecPerson=nonlocal	-2.2548	0.6674	-3.38	0.0007
RecSync=nonexplicit	-0.9877	0.5665	-1.74	0.0812
RecNum=singular	0.2587	0.2520	1.03	0.3047
RecProperNoun=propernoun	-0.7663	0.3582	-2.14	0.0324
LengthDiff	0.1726	0.0811	2.13	0.0334
LengthDiff'	0.2224	0.2241	0.99	0.3209
LengthDiff''	-10.4822	4.4451	-2.36	0.0184
LengthDiff'''	36.7681	14.6214	2.51	0.0119

Figure 13 presents the effect plots associated with each variable. The y-axis represents the predicted probability of POC. The x-axis shows the different levels of the predictor variables.

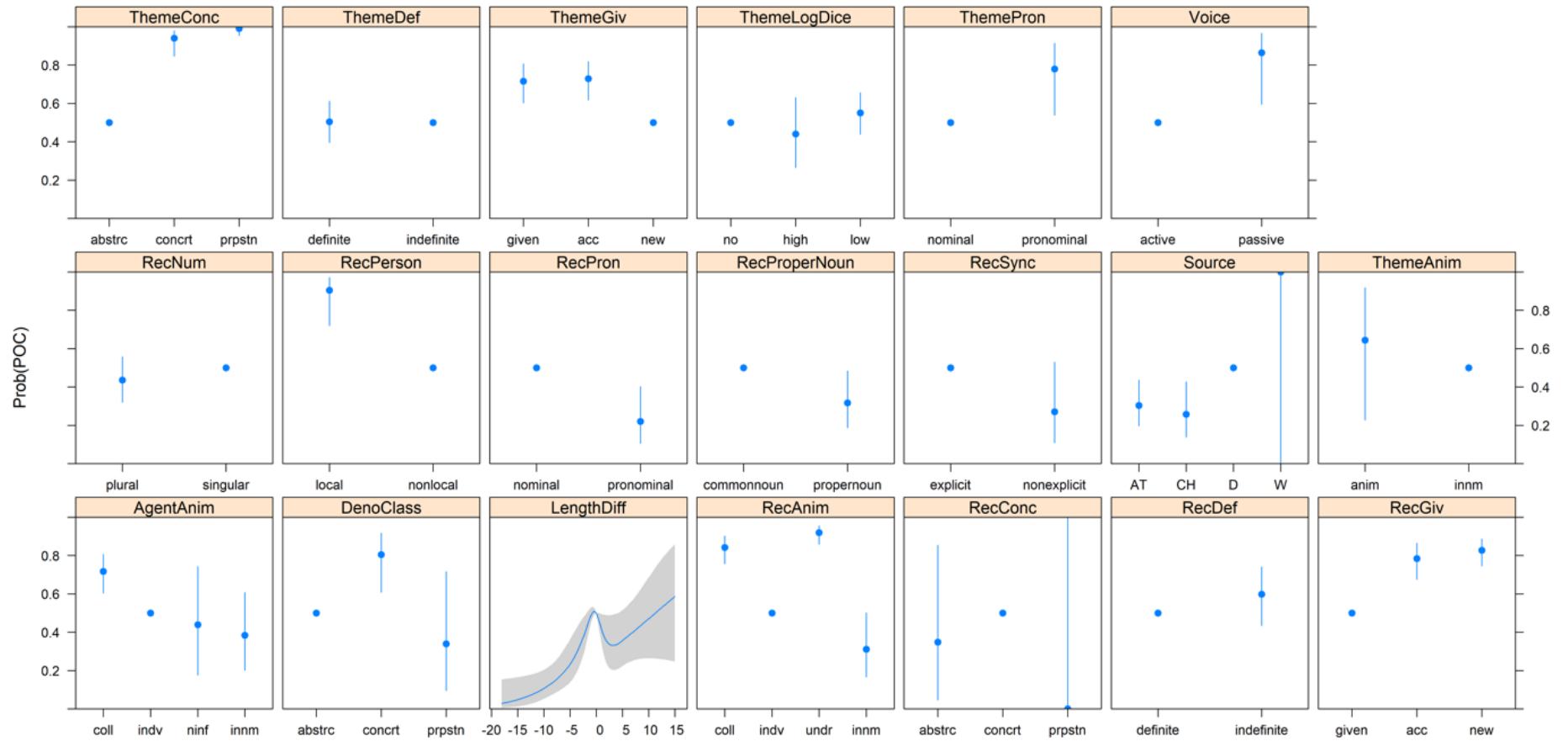


Figure 13 Effect plots for the *geben* dataset⁵⁷

⁵⁷ Clarification of the abbreviations in the effect plots: abstrc = abstract, concrct = concrete, prpstn = propositional; acc = accessible; AT = Austria, CH = Switzerland, D = Germany, W = Wikipedia, anim = animate, innm= inanimate; coll = collective, indv = individual, ninf = non inferrable; undr = underspecified.

Eight of the thirteen significant predictors (see Figure 12) are related to *THEME* or *RECIPIENT*: Animacy and Givenness of *RECIPIENT* are the most important predictors of the alternation. More specifically, POC (T-R) is found to be associated with collective or underspecified *RECIPIENTS*, accessible or new, and nominal *RECIPIENTS* that are a local person.⁵⁸ POC (T-R) is also associated with an accessible or given *THEME* that is concrete or propositional and pronominal. With respect to Length Difference, recall that a negative value means that the *THEME* is longer than the *RECIPIENT*, whereas a positive value indicates that the *RECIPIENT* is longer than the *THEME*. The spline function allows for bumps in the regression line, but we are mostly interested in the overall trend, which is that the probability for POC increases as the *RECIPIENT* becomes longer than the *THEME*. Conversely the longer the *THEME* with respect to the *RECIPIENT*, the larger the probability for an IOC. We further observe a significant drop in the regression line between the values 0 and 2, which suggests that for these Length Differences the IOC becomes more likely. As of +5, a rise in the probability for POC becomes apparent again, though the broader confidence band additionally suggests a larger variability (which is arguably due to a lower number of observations for these larger positive length differences)

The general predictors not related to *THEME* or *RECIPIENT* indicate that POC (T-R) is associated with concrete denotational class, passive voice, a collective *AGENT* and a German source. Recall, however, the latter predictor needs to be interpreted with caution, because the factor Source has to be interpreted with prudence.

Conversely, with IOC (R-T), the *RECIPIENT* is more likely to be individual or inanimate and given and pronominal, a non-local person (= 3rd person) and shorter than *THEME*. The *THEME* tends to be nominal, abstract and informationally new. IOC (R-T) is associated with abstract or propositional denotational class (notice however, the large Confidence Interval (CI) for the latter), active Voice, and an *AGENT* that is either an individual, inanimate or non inferrable (notice however the large CI). IOC (R-T) sentences tend to occur more often in texts labelled as Austrian or Swiss.

To conclude this section, I provide some typical examples of POC (T-R) – (132) to (134) – and IOC (R-T) – (135) and (136) – according to the quantitative findings.

- (132) *Niemals* *wird* [*das Geld*] <*an die Familien*>
 never be.PASS.PRS.3SG the.NOM money to the.ACC families
 gegeben, *sondern immer an die zuständigen Stellen.*
 give.PTCP but always to the competent authorities.

‘The money is never given to the families, but always to the competent authorities.’

⁵⁸ The latter finding seems to contradict Bresnan and Nikitina’s (2003: 25) finding in the SWITCHBOARD corpus of spoken English that local (first and second) persons are associated with the dative, but in their study, the verb *give* was given an exceptional status and their analysis confirms their hypothesis that “nonlocal recipients should be more often expressed as dative NPs with *give* than with other verbs” (Bresnan and Nikitina 2003: 30).

(passive Voice and concrete Denotational Class; nominal, collective RECIPIENT; predicted probability = 99% POC) UID 4268

- (133) *Die Stadt Wolfsburg* *will* *[das Grundstück]*
the.NOM city Wolfsburg want.PRS.3SG the.ACC property
<an einen Privatinvestor> *geben,* <<der dort 23 Wohnungen in Stadtvillen bauen will>>.
to a.ACC private investor give.INF who there 23 flats in urban villas build wants to
‘The city of Wolfsburg wants to give the property to a private investor who intends to build 23 flats in urban villas there.’

(concrete Denotational Class and collective AGENT, given, concrete THEME, new, nominal RECIPIENT; predicted probability = 93% POC) UID 3641

- (134) *Der* *gab* *auch gleich* *[seinen ersten Befehl]*
that one.NOM give.IPFV.3SG also immediately his.ACC first command
<an das Volk>.
to the.ACC people
‘He also immediately gave his first command to the people.’

(propositional THEME, nominal, collective, new RECIPIENT; predicted probability = 92% POC) UID 3219

- (135) *Der Besuch in Schweden* *hat* *<ihm>* *[Auftrieb und Energie]*
the.NOM visit in Sweden have.PRS.3SG he.DAT boost and energy.ACC
gegeben, *[[dranzubleiben]].*
give.PTCP hold on.INF
‘The visit in Sweden has given him a boost and the energy to continue his efforts.’

(active Voice, inanimate AGENT; new, abstract THEME; given, individual, pronominal RECIPIENT which is shorter than the THEME; abstract Denotational Class; predicted probability = 100% IOC) UID 4352

- (136) *Und* *abermals* *gaben* *die Sorgen um die weitere wirtschaftliche*
and again give.IPFV.3PL the.NOM worries about the further economic
Entwicklung in Europa *<der Stimmung>* *[einen Dämpfer].*
development in Europe the.DAT atmosphere a.ACC damper
‘And again, the worries about the further economic development in Europe put a damper on the atmosphere.’

(abstract Denotational Class, active Voice, inanimate AGENT, given RECIPIENT; predicted probability = 99% IOC) UID 3914

It must be pointed out, particularly with regard to the *geben* dataset, that certain an-PPs are to some extent structurally ambiguous. While the PP is analysed as the third argument of the ditransitive construction in (137), it might be argued that it is a

postmodifier to the noun as in (138) and (139). This remark especially applies to attestations such as *Warnung* ‘warning’ or *Signal geben an* ‘give a signal to’. However, whenever it was possible to analyse the *an*-PP as a constituent, it was considered a POC alternant of IOC.

- (137) *Damit will der Senat [ein Signal] <an den Markt> geben und den Bio-Gas-Ausbau unterstützen.*
 ‘In doing so, the senate wants to give a signal to the market and support the expansion of bio-gas.’ UID 3524
- (138) *Mit der Auflösung will der Springer-Verlag nach Fischers Worten [eine "Warnung an die Illoyalität"] geben.*
 ‘The Springer publishing house wants to give a “warning to the disloyal/warning about disloyalty” according to Fisher’s words.’ (Nürnberger Nachrichten, 11.06.2001)
- (139) *Im Klartext heißt [das Signal an die Bevölkerung]: Die Neutralität ist schon längst abgeschafft.*
 ‘In plain language, the signal to the population is: neutrality has long been abolished.’ (Salzburger Nachrichten, 17.04.1993)

5.2 *Schicken* and *senden*

5.2.1 Corpus distribution of the alternation

Table 18, which displays the frequencies obtained from the four separate random samples described in Section 4.1, shows that *schicken* is most often used directionally with e.g., *auf*-, *in*- and *nach*-PPs and some *an*- and *zu*-PPs (63% of the 253 attestations, standardised residual = 9.8), whereas *senden* is more often observed in *an*-POC⁵⁹ (70% of the 166 attestations, standardised residual = 10.5). If all the POC instantiations are considered alike, 85% (*schicken*) to 86% (*senden*) of the cases occurs in POC.

Table 18 Proportions according to the random samples

N = 400	IOC	<i>an</i> -POC	<i>zu</i> -POC	directional	total
<i>schicken</i>	38 (15%)	48 (19%)	8 (3%)	159(63%)	253 (100%)
<i>senden</i>	23 (14%)	117 (70%)	3 (2%)	23 (14%)	166 (100%)

($X^2 = 124$, $df = 3$, $P\text{-value} < 0.0001$)

⁵⁹ Recall that under the label *an*-POC only the (potentially) alternating cases are listed, not the directional uses. The same holds for the label *zu*-POC.

However, under the broad, typologically informed definition of ditransitive, directional uses are not included. In this view, Table 19 offers a more accurate representation of the occurrence of the ditransitive alternation with *schicken* and *senden*. If the pure directional instances are disregarded, the proportions alter substantially.

Table 19 Proportions of ditransitive uses of *schicken* and *senden*

	IOC	<i>an</i> -POC	<i>zu</i> -POC	total
<i>schicken</i>	38 (40%)	48 (51%)	8 (9%)	94 (100%)
<i>senden</i>	23 (16%)	117 (82%)	3 (2%)	143 (100%)

($X^2 = 136$, $df = 2$, $P < 0.001$)

For the ditransitive uses with *schicken* (51% + 9% = 60%), but most of all with *senden* (82% + 2% = 84%), POC is the preferred alternant, even if directional POCs are excluded from the calculations. Whereas for *schicken*, if Table 18 and Table 19 are compared, the percentage for IOC increases substantially from 15% to 40%, it remains approximately the same for *senden* (14% to 16%). A chi squared test suggests that *schicken* is more frequently used with IOC (standardised residual = 11), while *senden* is observed more with *an*-POC (standardised residual = 10). Of course, the limitation of this analysis is that it does not take into account other predictors.

5.2.2 Constituent order

IOC and POC have preferred word orders in the normal declarative clause. Instances with other constituent orders appear to be considerably more frequent with *schicken* and *senden* than those reported for *geben* (see section 5.1.2). The distribution of the constituent orders is shown in Table 20 and Table 21. Note that R-T in Table 20, with regard to *schicken* and *senden* also refers to topicalised instances of RECIPIENT.

Table 20 Constituent order in the *schicken* and *senden* dataset

	IOC(R-T)	IOC(T-R)	POC(R-T)	POC(T-R)	total
<i>schicken</i>	382 (34%)	69 (6%)	37 (3%)	640 (57%)	1128 (100%)
<i>senden</i>	119 (15%)	12 (1%)	31 (4%)	655 (80%)	817 (100%)
total	501 (26%)	81 (4%)	68 (3%)	1295 (67%)	1945 (100%)

($X^2 = 132$, $df = 3$, $P\text{-value} < 0.0001$)

Table 21 Association between constituent order and alternant in the *schicken* and *senden* dataset

	IOC	POC	total
R-T	501 (86%)	68 (0.5%)	569 (29%)
T-R	81 (14%)	1295 (95%)	1376 (71%)
total	582 (100%)	1363 (100%)	1945 (100%)

($X^2 = 1292$, $df = 1$, $P\text{-value} < 0.0001$, Cramér's $V = 0.81$)

From Table 20, it can be deduced that 34% of the occurrences with *schicken* and 15% of those with *senden* have R-T order in IOC and that POC T-R order is observed in 57% resp. 80% of the cases (compare 52% IOC R-T and 46% POC T-R with *geben*). However, although there is a strong association between IOC and R-T order and POC and T-R order with the verbs *schicken* and *senden* in present-day German, the association does not hold to the extent found with the verb *geben* (Cramér's V for *geben* = 0.95, which is considerably higher than 0.81 here). As shown in Table 20, particularly with *schicken*, more attestations occur in IOC (T-R) (6%) constituent order than with *geben* (2%). POC(R-T) also shows slightly more occurrences (3% to 4% compared to 0.1 % for *geben*). With regard to IOC in particular it could be questioned whether R-T should be considered the unmarked constituent order, as 14% T-R is arguably not infrequent.

5.2.3 Statistical analysis

Based on the logistic regression model⁶⁰, there is evidence for the effect of 9 factors. In order of importance the significant factors are: (1) Animacy of RECIPIENT, (2) Pronominality of RECIPIENT, (3) Verb, (4) Length Difference, (5) Givenness of RECIPIENT, (6) Voice, (7) Sense, (8) Syncretism of RECIPIENT, (9) Propernounhood of RECIPIENT. Note that THEME givenness is not significant ($p > 0.05$). The relative contribution of each predictor to the model fit is displayed in Figure 14. Figure 14 suggests that Animacy of RECIPIENT yields a very strong effect, followed by Pronominality of RECIPIENT.

⁶⁰ With respect to the quality of the model, internal validation using bootstrap validation (2000 bootstrapped samples) indicates very good predictive quality. Bias-corrected Somer's D_{xy} equals 0.8209 (which is equal to a bootstrapped C-index of 0.91045). Other validation indexes (see Appendix B) do not show signs of overoptimism, which suggests that overfitting is not problematic. We checked for possible collinearity by examining the VIFs, as reported by the `vif()` function in the `rms`-package. The VIFs suggest some collinearity between `DenoClass` and `Concreteness of Theme`. The VIFs for `ThemeConcrete = concrete` and `propositional` both equal 14, the VIFs for `DenoClass = concrete` equals 30 and `propositional` equals 31, Note that for *schicken/senden* the factor `RecConc` was not included in the model because of lack of data (no attestations for the level "propositional"), see Appendix B for more model diagnostics.

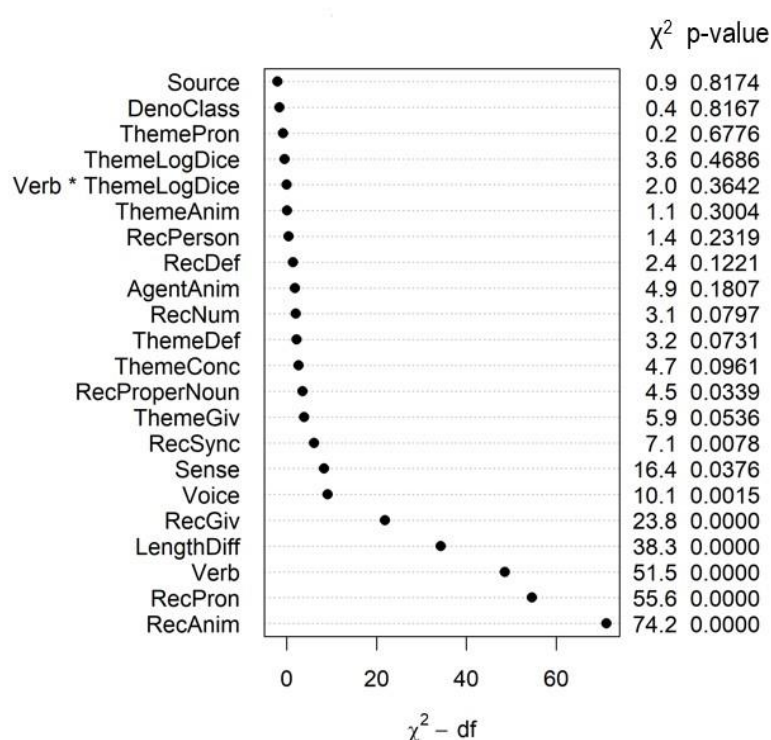


Figure 14 Ranking of apparent importance of predictors based on ANOVA of nested models (model without RecConc).⁶¹

Table 22 The *schicken/sendern* model

Logistic Regression Model

```
lrm(formula = Cx ~ Verb * ThemeLogDice + Sense + Source + Voice +
    DenoClass + AgentAnim + ThemePron + ThemeGiv + ThemeAnim +
    ThemeDef + ThemeConc + ThemeLogDice + RecPron + RecGiv +
    RecAnim + RecDef + RecPerson + RecSync + RecNum + RecProperNoun +
    rcs(LengthDiff), data = ss, x = TRUE, y = TRUE, penalty = p$penalty)
```

Penalty factors

simple		nonlinear	interaction	nonlinear.interaction
0.76		0.76	0.76	0.76
		Model Likelihood	Discrimination	Rank Discrim.
		Ratio Test	Indexes	Indexes
obs	1945	LR chi2 1193.97	R2 0.645	C 0.922

⁶¹ The following abbreviations are used: DenoClass = Denotational Class, ThemePron = Pronominality of THEME, ThemeLogDice = Collocation Strength of THEME and verb, Verb*ThemeLogDice = interaction between Verb and LogDice value of THEME, ThemeAnim = Animacy of THEME, RecPerson = grammatical person of RECIPIENT, RecDef = Definiteness of RECIPIENT, AgentAnim = Animacy of AGENT, RecNum = Number of RECIPIENT, ThemeDef = Definiteness of THEME, ThemeConc = Concreteness of THEME, RecProperNoun = Propernounhood of RECIPIENT, ThemeGiv = Givenness of THEME, RecSync = Syncretism of RECIPIENT, RecGiv = Givenness of RECIPIENT, LengthDiff = Length Difference between RECIPIENT and THEME, RecPron = Pronominality of RECIPIENT, RecAnim = Animacy of RECIPIENT.

IOC	582	d.f.	39.045	g	2.850	Dxy	0.843
POC	1363	Pr(> chi2)	<0.0001	gr	17.287	gamma	0.844
max deriv	6e-09	Penalty	14.14	gp	0.353	tau-a	0.354
				Brier	0.091		

	Coef	S.E.	wald Z	Pr(> Z)	Penalty Scale
Intercept	0.8914	1.3058	0.68	0.4948	0.0000
Verb=senden	1.4514	0.2402	6.04	<0.0001	0.6164
ThemeLogDice=high	0.1904	0.2395	0.80	0.4266	0.7118
ThemeLogDice=low	-0.0554	0.2227	-0.25	0.8036	0.7118
Sense=B	-0.1792	0.2259	-0.79	0.4277	0.8219
Sense=C	-0.7945	0.4863	-1.63	0.1023	0.8219
Sense=D	0.0274	0.7973	0.03	0.9726	0.8219
Sense=E	-1.7991	0.7640	-2.35	0.0185	0.8219
Sense=F	-2.8800	0.9825	-2.93	0.0034	0.8219
Sense=G	-1.5167	0.6403	-2.37	0.0178	0.8219
Sense=H	-0.7183	0.6721	-1.07	0.2852	0.8219
Sense=I	-0.7656	0.6614	-1.16	0.2470	0.8219
Source=CH	-0.1351	0.3066	-0.44	0.6594	0.7550
Source=D	0.0382	0.2163	0.18	0.8597	0.7550
Source=W	-0.1536	0.3445	-0.45	0.6557	0.7550
Voice=passive	1.3884	0.4624	3.00	0.0027	0.6164
DenoClass=concrete	0.4965	0.8637	0.57	0.5654	0.7118
DenoClass=propositional	0.7505	0.8679	0.86	0.3872	0.7118
AgentAnim=indv	0.1884	0.2090	0.90	0.3675	0.7550
AgentAnim=ninf	0.0676	0.4165	0.16	0.8710	0.7550
AgentAnim=innm	0.8397	0.4682	1.79	0.0729	0.7550
ThemePron=pronominal	-0.1160	0.3189	-0.36	0.7160	0.6164
ThemeGiv=acc	-0.4640	0.2289	-2.03	0.0426	0.7118
ThemeGiv=new	-0.4675	0.2087	-2.24	0.0251	0.7118
ThemeAnim=innm	-1.2243	0.7340	-1.67	0.0953	0.6164
ThemeDef=indefinite	-0.3424	0.1821	-1.88	0.0600	0.6164
ThemeConc=concrete	0.8396	0.5863	1.43	0.1521	0.7118
ThemeConc=propositional	0.2345	0.5709	0.41	0.6812	0.7118
RecPron=pronominal	-2.3226	0.2996	-7.75	<0.0001	0.6164
RecGiv=acc	0.3528	0.2205	1.60	0.1096	0.7118
RecGiv=new	0.9127	0.1890	4.83	<0.0001	0.7118
RecAnim=indv	-0.9057	0.2285	-3.96	<0.0001	0.7550
RecAnim=undr	1.0299	0.2810	3.67	0.0002	0.7550
RecAnim=innm	1.1826	0.5587	2.12	0.0343	0.7550
RecDef=indefinite	0.4080	0.2566	1.59	0.1119	0.6164
RecPerson=nonlocal	0.4674	0.3924	1.19	0.2336	0.6164
RecSync=nonexplicit	0.6232	0.2567	2.43	0.0152	0.6164
RecNum=singular	-0.3000	0.1845	-1.63	0.1041	0.6164
RecProperNoun=propernoun	0.5709	0.2470	2.31	0.0208	0.6164
LengthDiff	0.1196	0.0363	3.30	0.0010	3.6492
LengthDiff'	0.0828	0.1101	0.75	0.4521	3.7663
LengthDiff''	-0.2731	1.7439	-0.16	0.8756	0.4304
LengthDiff'''	-1.8370	3.6962	-0.50	0.6192	0.1780
Verb=senden * ThemeLogDice=high	-0.3013	0.3934	-0.77	0.4438	0.3175
Verb=senden * ThemeLogDice=low	-0.4788	0.4361	-1.10	0.2722	0.2138

Figure 15 displays the effect plots associated with each variable. The y-axis represents the predicted probability of POC, the x-axis the different levels of the predictor variables.

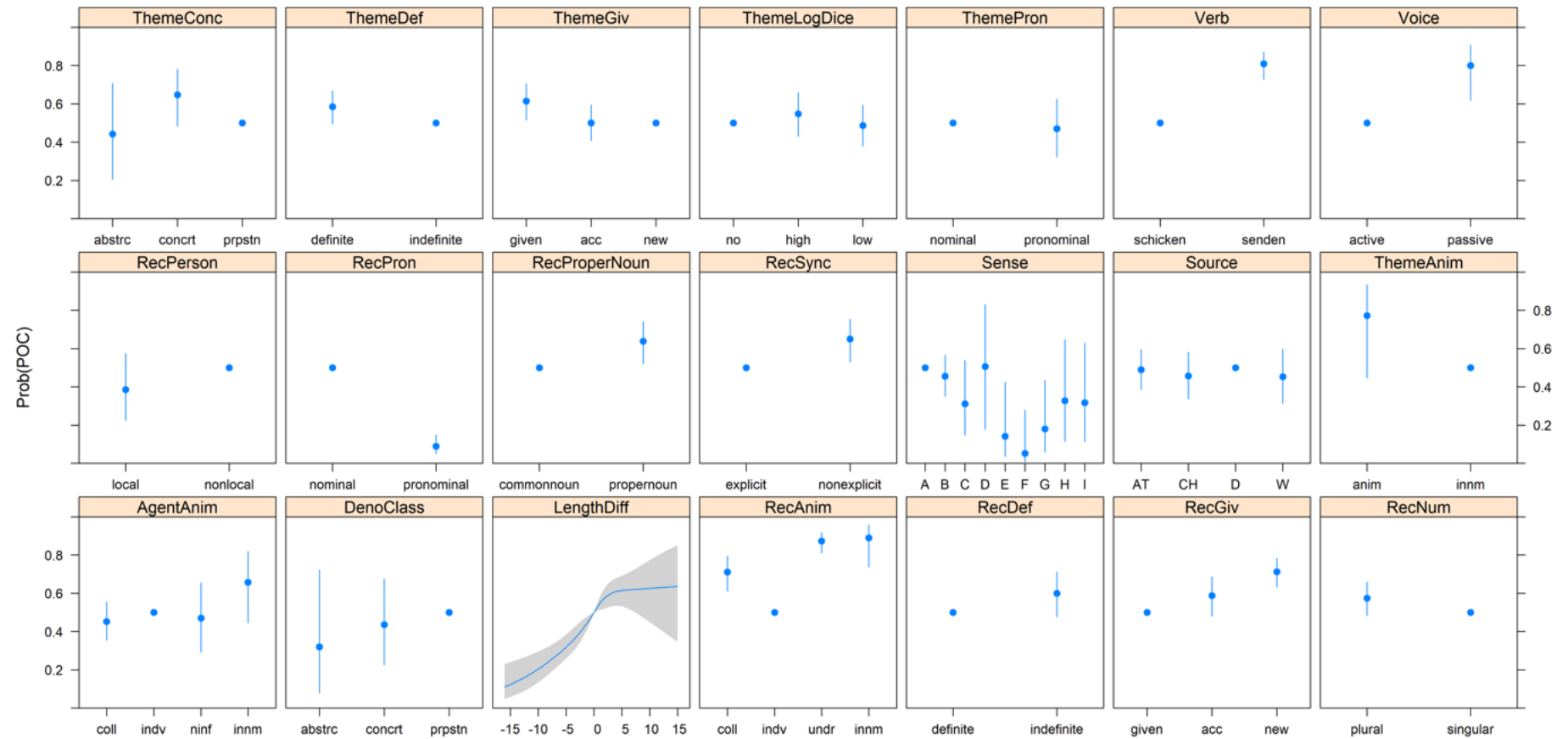


Figure 15 Effect plots for the *schicken/senden* dataset⁶²

⁶² Clarification of the abbreviations in the effect plots: acc = accessible, anim = animate, inanim = inanimate, abstrc = abstract, concrct = concrete, prpstn = propositional, coll = collective, indiv = individual, ninf = non inferrable, innm = inanimate, undr = underspecified.

Overall, IOC is positively associated with individual, pronominal and given RECIPIENTS that are explicit and common nouns, shorter RECIPIENTS than THEMES, the Verb *schicken* rather than *senden*, active Voice, the Senses C “object”, E “religious”, F “meteorological” and G “financial”. By contrast, the following factors have a positive effect on POC: nominal, collective, underspecified and inanimate RECIPIENTS, passive voice, the verb *senden*, and longer RECIPIENTS than THEMES. Senses A “info-dual reference” and D “person” are slightly more strongly associated with POC than the other senses (observe however the large Confidence Interval for sense D). New and accessible RECIPIENTS also have a positive effect on POC in comparison to given RECIPIENTS, and so have non-explicit RECIPIENTS that are proper nouns in comparison to explicit arguments that are common nouns.

Below, I provide some typical examples of POC (140), (141) and IOC (142), (143) with both verbs, according to the quantitative findings.

- (140) *Es wird [ein Signal] <an das BMW-Callcenter> gesendet.*
 that be.PASS.PRS.3SG a signal.ACC to the.ACC BMW call center send.PTCP
 ‘A signal is sent to the BMW-call center.’

(Verb *senden*, nominal, underspecified RECIPIENT, passive Voice, Sense H “technical”, longer RECIPIENT than THEME, accessible RECIPIENT; predicted probability = 98% POC) UID 6862

- (141) *Hingegen könnten [Betroffene] <zum Fürsorgeamt>*
 by contrast can.SBJV.3PL victims.NOM to the.DAT welfare office
geschickt werden.
 send.PTCP be.PASS.INF

‘On the other hand, victims could be sent to the welfare office.’

(nominal, underspecified RECIPIENT, passive Voice, Sense D “person”; predicted probability = 98% POC) UID 5354

- (142) *Sie schickte <mir> statt dessen [ein paar Tafeln Schokolade*
 she.NOM send.IPFV.3SG I.DAT instead a.ACC couple of bars of chocolate
oder etwas Gestricktes].
 or something knitted

‘Instead, she sent us a couple of bars of chocolate or something knitted.’

(Verb *schicken*, pronominal, individual, explicit, given RECIPIENT, which is a common noun, active Voice, Sense C “object”, shorter RECIPIENT than THEME; predicted probability = 99% IOC) UID 4860

- (143) *Der Körper hat <mir> [Signale] gesendet,*
 the body.NOM have.PRS.3SG I.DAT signals.AKK send.PTCP
und ich habe sie ignoriert.
 and I have ignored them
 ‘The body sent me signals, but I ignored them.’

(pronominal, individual, explicit, given, RECIPIENT which is a common noun, shorter RECIPIENT than THEME, active Voice, Sense C “object”; predicted probability = 85% IOC) UID 6595

The two Conditional Inference Trees (CITs) for *schicken* (cf. Figure 16) and *senden* (cf. Figure 17), reveal interesting facts about the alternation and the associations of the alternants with certain significant factors.

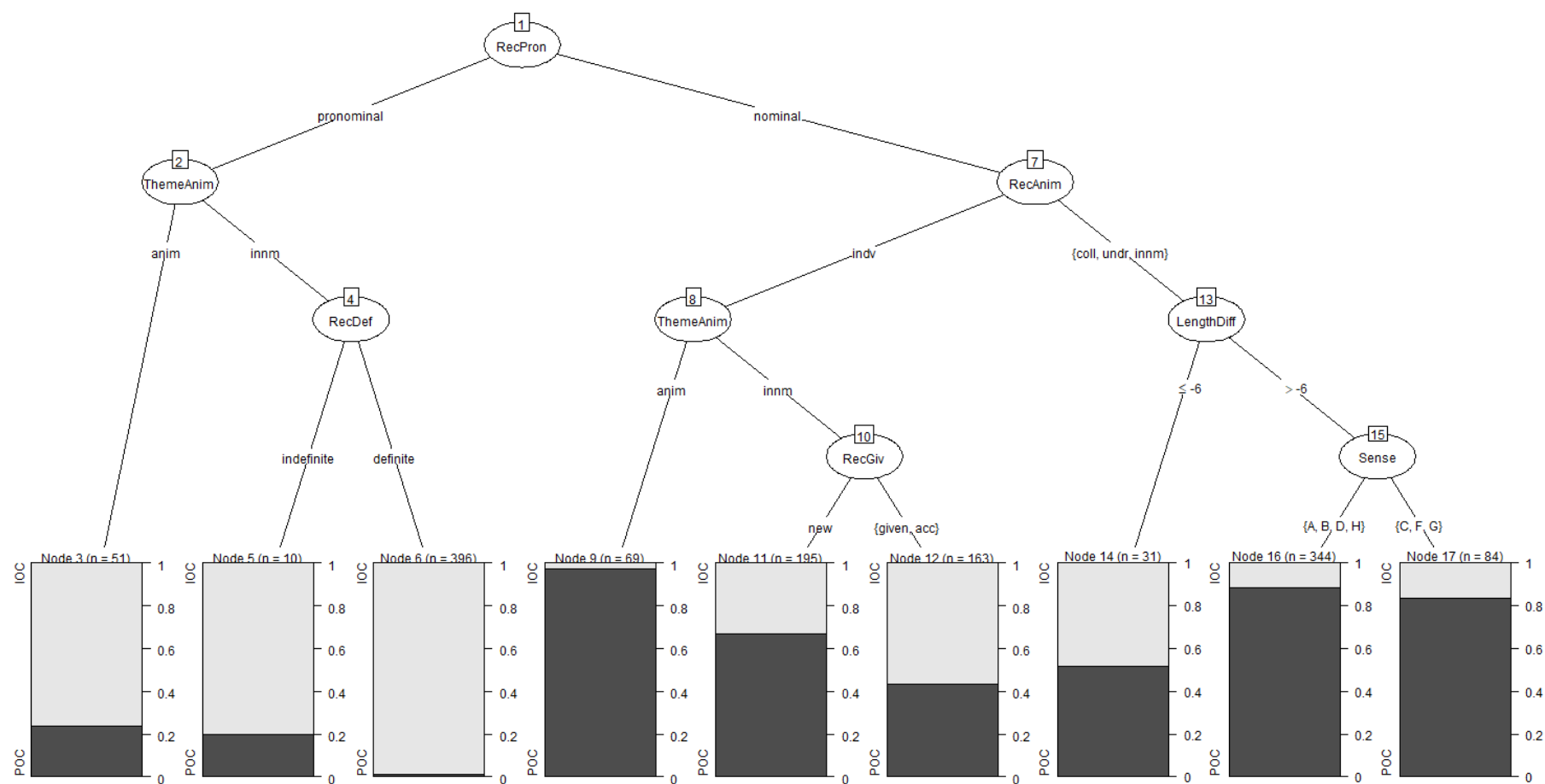


Figure 16 CIT for *schicken*⁶³

⁶³ Clarification of the abbreviations: anim = animate, innm = inanimate; indv = individual, coll = collective, undr = underspecified.

Table 23 Confusion matrix. Correct within sample prediction rate = 83%.

Predicted	Observed	
	IOC	POC
IOC	530	90
POC	136	587

The confusion matrix in Table 23 tabulates the predicted versus the observed outcomes. For instance, the CIT predicts 530 IOCs correctly, meaning that following the rules of the CIT, the predicted outcome IOC is equal to the observed IOC. However, the tree also incorrectly predicts 90 IOCs, which are actually POCs in the dataset. “Predict” thus means following the rules of the statistical model. The overall correct prediction rate is the ratio between the correct predictions (= 530 + 587) and the sum total of all observations (= 530 + 90 + 136 + 587), or: $(530 + 587)/(530 + 90 + 136 + 587) = 83\%$.

The CIT analysis for *schicken* (cf. Figure 16) suggests that POC is mostly associated with nominal, individual RECIPIENTS in combination with animate THEMES (Node 9), nominal, individual RECIPIENTS with inanimate THEMES and new RECIPIENTS (Node 11) and nominal, collective, underspecified or inanimate RECIPIENTS which have a length difference of more than -6 with the THEME (nodes 16 and 17). Below, I present some typical examples. With respectively 344 and 84 attestations the most frequent POC use is represented in nodes 16 (145) and 17 (146). Interestingly, what the CIT does not show, but what will become apparent after an investigation of the dataset, is that nominal, individual RECIPIENTS with animate THEMES (144) are mainly in *zu*-POC whereas the *an*-POC attestations with nominal, individual RECIPIENTS have inanimate THEMES (147). In subsection 5.2.4 I will comment on this difference.

- (144) *Indien schickte [Unterhändler] <zu Airbus-Entführern>.*

‘India sent negotiators to the Airbus hijackers.’

(nominal, individual RECIPIENT, animate THEME – Node 9) UID 5308

- (145) *Kommt es zur Einigung, schickt Pfandy [den Vertrag] <an beide Parteien>.*

‘If an agreement is reached, Pfandy sends the contract to both parties.’

(nominal, collective RECIPIENT, Length Difference > -6, Sense “A info-dual reference” – Node 16) UID 5665

- (146) *Sie erzählte, daß sie jeden Tag [Lebensmittelpakete] <an ihre Familie in Arnstadt (Thüringen)> schicke, weil es dort so gut wie nichts zu kaufen gäbe.*

‘She said that she sends grocery packages to her family in Arnstadt (Thüringen) every day, because there is practically nothing to buy there.’ UID 5762

(nominal, collective RECIPIENT, Length Difference > -6, Sense “C-object” – Node 17)

- (147) *Ich schicke [ganz viele Grüße] <an meine Freundin und ihre Eltern>.*
 ‘I send my best regards to my girlfriend and her parents.’
 (nominal, individual, new RECIPIENT, inanimate THEME – Node 11) UID 5232

Conversely, IOC is mostly found with pronominal RECIPIENTS (Node 3, e.g., (148), Node 5, e.g., (149), and Node 6, e.g., (150), the latter with a high frequency of 396 instantiations) and there is also a preference for IOC when the nominal, individual RECIPIENT is given or accessible and combined with an inanimate THEME (Node 12, n = 163), e.g., (151). With very long THEMES (length difference less than or equal to -6⁶⁴) there seems to be no preference for either of the alternants (Node 14). What the CIT again does not show, is that in Node 3, the alternation is between IOC and solely zu-POC attestations, for more details about this finding, I refer to Subsection 5.2.4.

- (148) *Die schicken <uns> sonst nur [Terroristen].*
 ‘Otherwise, they only send us terrorists.’
 (pronominal RECIPIENT, animate THEME – Node 3) UID 5452
- (149) *Am Wochenende habe ich <ihr> [mehrere Mails] geschickt.*
 ‘I sent her several mails over the weekend.’
 (pronominal, definite RECIPIENT, inanimate THEME – Node 5) UID 4540
- (150) *Sie wollen nur, daß die Tochter <ihnen> [das Geld] schickt und nicht dem Ehemann.*
 ‘They just want the daughter to send them the money, and not to the husband.’
 (pronominal, definite RECIPIENT, inanimate THEME – Node 6) UID 5416
- (151) *Wir haben <Sandiyawan> [eine Granate] geschickt.*
 ‘We sent a grenade to Sandiyawan.’
 (nominal, individual, given RECIPIENT, inanimate THEME – Node 12) UID 5418

⁶⁴ For clarification: length difference ≤ -6 means that the THEME is (more than) 6 words longer than the RECIPIENT.

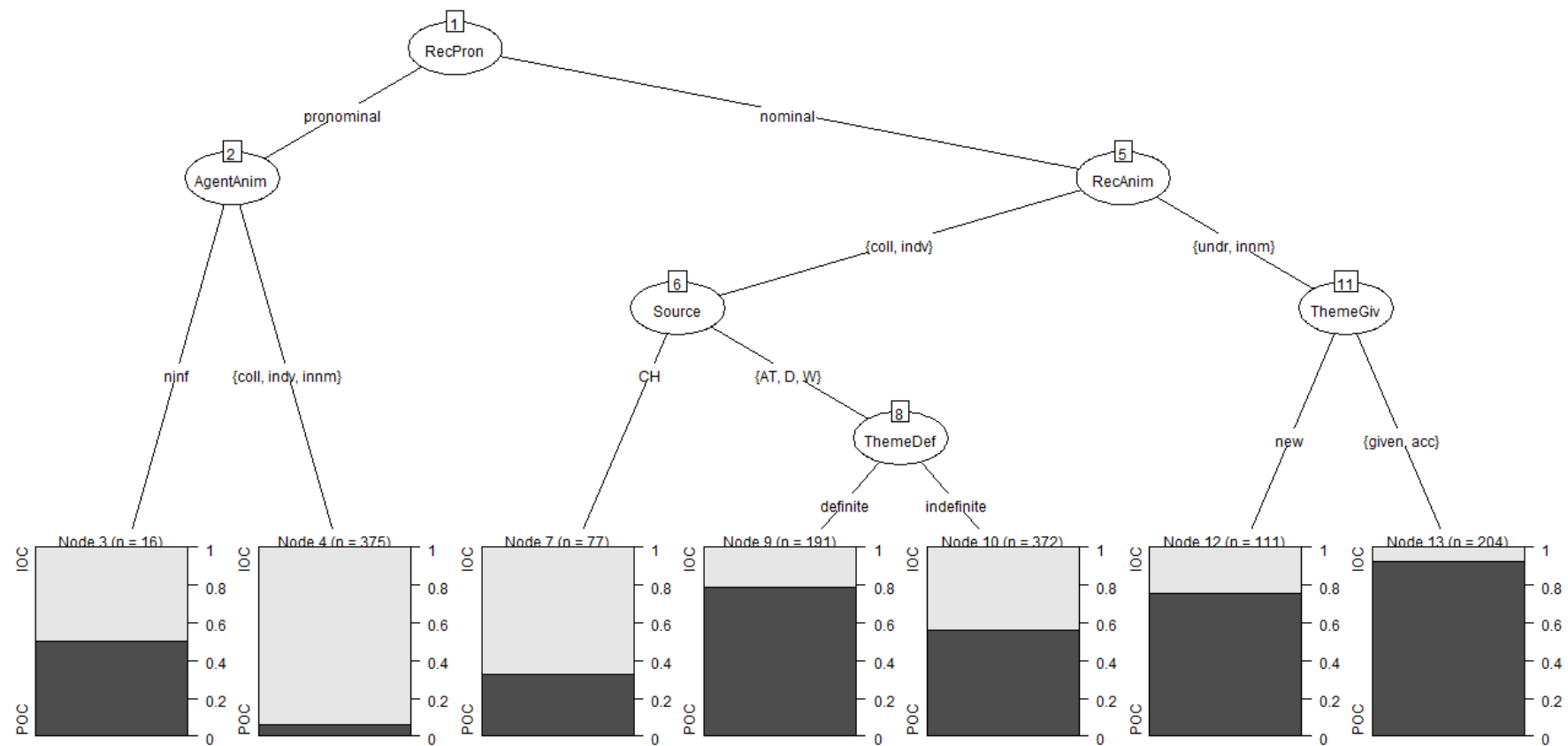


Figure 17 CIT for *senden*⁶⁵

⁶⁵ Clarification of the abbreviations in the CIT: ninf = non inferrable, coll = collective, indv = individual, innm = inanimate, acc = accessible.

Table 24 Confusion matrix. Correct within sample prediction rate = 78%.

Predicted	Observed	
	IOC	POC
IOC	413	55
POC	247	631

The confusion matrix in Table 24 indicates a sample prediction rate of 78%. The CIT for *senden* (cf. Figure 17) shows that POC is mainly associated with nominal, underspecified or inanimate RECIPIENTS with either new (Node 12, n = 111) or given or accessible THEMES (Node 13, n = 204). POC is also the preferred alternant with collective or individual RECIPIENTS combined with definite (Node 9, n = 191) or indefinite (Node 10, n = 372) THEMES from an Austrian, German or Wikipedia source. Typical examples are (152) through (155).

- (152) *Der genarrte Kunde sandte [ein Fax] <zur Beschwerdestelle>.*
 ‘The fooled customer sent a fax to the complaints office.’
 (nominal, underspecified RECIPIENT, new THEME - Node 12) UID 6790
- (153) *Er hat immer wieder [Manuskripte] <an Verlage und Zeitschriften> gesandt.*
 ‘He kept sending manuscripts to publishers and magazines.’
 (nominal, underspecified RECIPIENT, accessible THEME - Node 13) UID 6953
- (154) *Wieder an Land, sandte er [die Probe] <an den Naturforscher Charles Darwin>.*
 ‘Back on land, he sent the sample to the naturalist Charles Darwin.’
 (nominal, individual RECIPIENT, definite THEME, German Source - Node 9) UID 6964
- (155) *Er habe [Meldungen über "Zwischenfälle"] stets <an die SED-Bezirksleitung> gesandt.*
 ‘It is said that he always sent reports of “incidents” to the SED district management.’
 (nominal, collective RECIPIENT, indefinite THEME, German Source - Node 10) UID 6855

IOC is the preferred alternant with pronominal RECIPIENTS combined with a collective, individual or inanimate AGENT (Node 4, n = 375). With non inferrable AGENTS, there seems to be no preference for IOC or POC (Node 3). When the source is Swiss and the RECIPIENT nominal and collective or individual, there is more IOC as well (Node 7, n = 77). Typical examples are (156) and (157).

- (156) *Sie hoffte auf ein besseres Leben und wollte <uns> [Geld] senden.*
 ‘She hoped for a better life and wanted to send us money.’
 (pronominal RECIPIENT, individual AGENT – Node 4) UID 6120

- (157) *Jeder kann <den Teilnehmern> zudem [sein persönliches "virtuelles Survival-Paket"] senden.*
 ‘Everyone can also send his personal “virtual survival package” to the participants.’
 (nominal, individual RECIPIENT, Swiss Source - Node 7) UID 7068

The CITs for *schicken* and *senden* show that Pronominality of RECIPIENT is a consistent effect, as it is the main predictor in both CITs. Moreover, it is also a factor that appears to be significant in the logistic regression analysis. The effect predicts in both analyses that, all else being equal, sentences with pronominal RECIPIENTS are more associated with IOC than with POC.

In sum, there are certain combinations of factors that point in the same direction in both models: e.g., with the verb *schicken*, pronominal definite RECIPIENTS are strongly associated with IOC (Node 6, $n = 396$) and with the verb *senden*, pronominal RECIPIENTS with collective, individual or inanimate AGENTS strongly prefer IOC (Node 4, $n = 375$). For POC, with the verb *schicken*, Nodes 16 ($n = 344$) and 17 ($n = 84$) seem to represent the most common combination (nominal, collective, underspecified or inanimate RECIPIENTS in combination with a length difference that is more than -6). Node 9 adds the combination nominal, individual RECIPIENT with animate THEME, which is a typical *zu*-POC realisation for *schicken* (see subsection 5.2.4). For *senden*, POC is mainly observed when nominal, underspecified or inanimate RECIPIENTS are in combination with given or accessible THEMES (Node 13, $n = 204$).

In the next section a tree analysis with three outcomes (IOC, *an*-POC, *zu*-POC) is created.

5.2.4 IOC vs. *an*-POC vs. *zu*-POC

As explained in the data collection section (Section 4.1), from the beginning, all directional *an*-POC attestations (e.g., *an den Rhein*) and a considerable number of *zu*-POC attestations (e.g., *zum Duschen*, *zur Schule*) were excluded for the *schicken*/*senden* dataset. The distribution of the sentences that were retained is given in Table 25, in which the number of *an*-POC, *zu*-POC and IOC attestations with the two verbs are listed. Because of the exclusion procedure described in Section 4.1.3, *zu*-POC attestations may be slightly oversampled.

Table 25 Bivariate sample distribution between *schicken* and *senden* vs. IOC, *an*-POC and *zu*-POC

	<i>an</i> -POC	IOC	<i>zu</i> -POC	total
<i>schicken</i>	525	451	152	1128
<i>senden</i>	568	131	118	817
total	1093	582	270	1945

($X^2 = 135$, $df = 2$, P-Value < 0.0001)

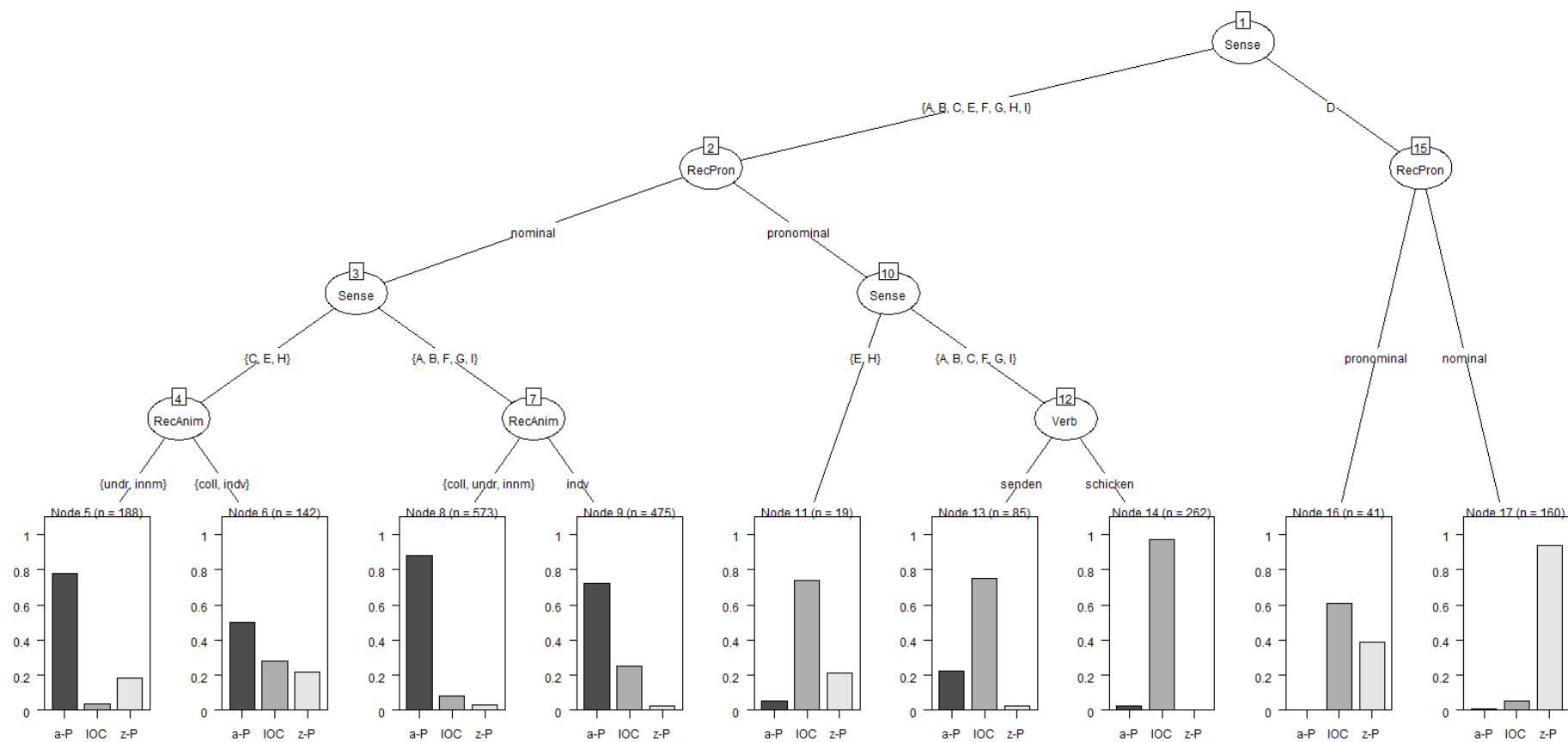


Figure 18 CIT for IOC vs. *an*-POC and *zu*-POC⁶⁶

⁶⁶ Clarification of the abbreviations in the CIT: a-P = *an*-POC, z-P = *zu*-POC. undr = underspecified, innm = inanimate, coll = collective, indiv = individual.

Table 26 Confusion matrix. Correct within sample prediction rate = 81%.

Predicted	Observed		
	<i>an</i> -POC	IOC	<i>zu</i> -POC
<i>an</i> -POC	1066	215	97
IOC	26	358	23
<i>zu</i> -POC	1	9	150

The confusion matrix in Table 26 indicates that the overall correct prediction rate is 81%. The CIT with three outcome levels, presented in Figure 18, helps in differentiating between *an*-POC and *zu*-POC. The predominant number of *zu*-POC attestations is found in Nodes 16 and 17, and the alternation with *zu*-POC is also observed in Nodes 5, 6 and to a lesser extent in Node 11. *Zu*-POC attestations are negligible in the other nodes.

With Sense D “person” in combination with pronominal or nominal RECIPIENTS the IOC/POC alternation is only between IOC and *zu*-POC, cf. (158) and (159).

- (158) *Dieser schickte [mich] mit einem Koffer in der Hand <zu den Kunden>.*

‘The latter sent me to the customers with a suitcase in hand.’

(Sense D “person”, nominal RECIPIENT – Node 17) UID 5254

- (159) *Der Verband soll <uns> bitte öfter mal [eine Frau] schicken.*

‘The association should send us a woman more often.’

(Sense D “person”-, pronominal RECIPIENT – Node 16) UID 4694

With the other senses, when the RECIPIENT is nominal, *zu*-POC is also observed with Senses C “object”, E “religious” and H “technical” and occurs next to *an*-POC (cf. Nodes 5 and 6), cf. (160) and (161). With pronominal RECIPIENTS, *zu*-POC occurs to a lesser extent with Senses E “religious” and H “technical” (Node 11), where IOC is more dominant (162).

- (160) *Jedes Jahr schickt er [zehn bis zwanzig Filme] <an das Festival>.*

‘Every year, he sends ten to twenty films to the festival.’

(Sense C “object”, nominal, underspecified RECIPIENT- Node 5) UID 5400

- (161) *Gregor sandte [einen fragenden Blick] <zu Daniel>.*

‘Gregor sent a questioning look to Daniel.’

(Sense C “object”, nominal, individual RECIPIENT – Node 6) UID 6774

- (162) *Ich werde < euch> [den Geist der Wahrheit] senden.*

‘I will send you the spirit of truth.’

(Sense E “religious”, pronominal RECIPIENT – Node 11) UID 6256

Conversely, *an*-POC is the preferred variant with nominal RECIPIENTS in the Senses A “information-content.”, B “information-dual reference”, F “meteorological” G “financial” and H “technical” (Nodes 8 and 9, cf. (163) and (164)). With pronominal RECIPIENTS, and the verb *senden*, *an*-POC also alternates with IOC (with Senses A, B, C “object”, F, G and I “activity” (Node 13), cf. (165), whereas *schicken* solely prefers IOC there (Node 14, n = 262), cf. (166).

(163) *[Seinen Vorschlag] hat Pieper natürlich auch <an die Stadt> gesendet.*

‘Of course, Pieper also sent his proposal to the city.’

(Sense B “information-content”, underspecified RECIPIENT – Node 8) UID 7005

(164) *Mach eine Liste und sende [sie] <an einen Freund>.*

‘Make a list and send it to a friend.’

(Sense A “information-dualreference”, individual RECIPIENT – Node 9) UID 6970

(165) *Liane Bell aus Nordhofen sandte <uns> [die Aufnahme].*

‘Liane Bell from Nordhofen sent us the photo.’

(Sense C “object”, pronominal RECIPIENT, *senden* – Node 13) UID 6199

(166) *Wollte er <dir> [einen Gewittersturm] schicken?*

‘Did he want to send you a thunderstorm?’

(Sense F “meteorological”, pronominal RECIPIENT, *schicken* – Node 14) UID 4679

In sum, it is safe to say that three different effects are made visible in this CIT: either *an*-POC is the preferred variant (cf. the leftmost Nodes 5, 6, 8 ,9) mainly with nominal RECIPIENTS, and Pronominality of RECIPIENT is a very strong predictor for IOC (the rightmost Nodes 11, 13, 14 and 16). However, Node 17 deviates and displays the third effect: when persons are sent to other persons (i.e., sense D “person”), the attestations seem to be almost exclusively in *zu*-POC (Node 17), unless the RECIPIENT is pronominal (Node 16).

5.3 The complex verbs

5.3.1 Occurrence of the alternation compared to the noncomplex verbs

The frequencies of ditransitive usages of the 14 complex trivalent verbs under study differ considerably. Figure 19, which is based on the data provided in Table 6, shows that *übergeben* (83%), is the verb that is used most often in the ditransitive pattern, followed by *übersenden* (75%), *verleihen* (73%), *weitergeben* (62%) and *zurückgeben* (50%). *Einschicken* (9%), *abgeben* (13%) and *zurückschicken* (13%) are the verbs that are least often used in the ditransitive pattern. For comparison, the noncomplex verbs are also represented in the table. *Senden*, with 56%, is used most often in the ditransitive pattern as compared to *schicken* and *geben*.

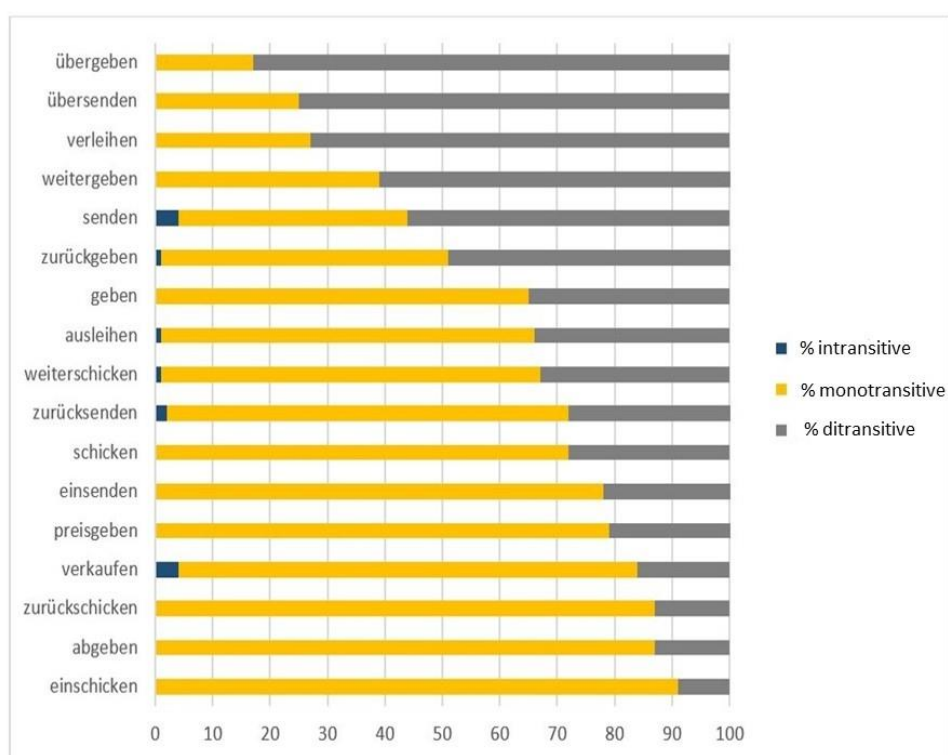


Figure 19 Intransitive, monotransitive and ditransitive uses of the verbs under study (based on the random sample data in Table 4 and Table 6)

However, if we consider the absolute numbers and establish the proportion IOC vs. POC in the ditransitive use, Figure 20 shows that the particle verb *verleihen* is by far the most ditransitive verb with moreover a strong preference for IOC, followed by the particle verbs *übersenden* and *übergeben* that also tend towards IOC, but less so than *verleihen*. Whereas Figure 20 suggests that *weitergeben* prefers POC, *zurückgeben* seems to have a preference for IOC. *Weiterschicken* appears to be very strongly associated with POC, and so does *senden* and to a slightly lesser degree *zurücksenden*. Figure 20 creates the impression that *ausleihen* displays a fairly even distribution of IOC and POC. *Schicken* slightly prefers

POC to IOC. *Preisgeben* and *geben* look as if they are strongly attracted to IOC, whereas *verkaufen*, *einsenden*, *zurückschicken*, *abgeben* and *einschicken* tend to occur more often in POC when they are used ditransitively.

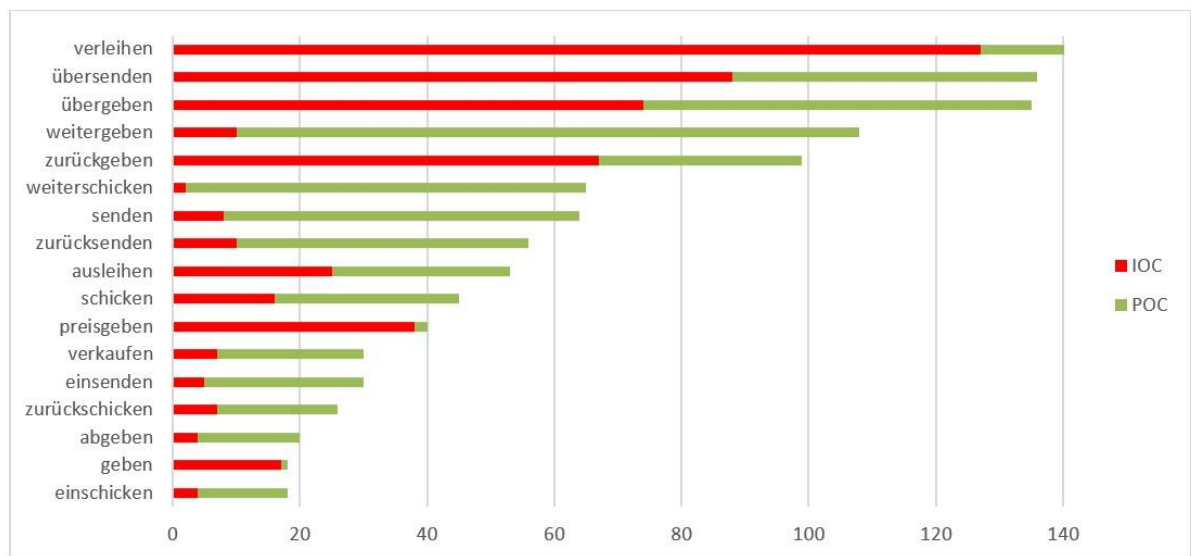


Figure 20 Constructional distribution within the ditransitive uses (based on the random sample data)

The results in Figure 20 suggest that the trivalent verbs under study, when used ditransitively, show clear differences in their frequency of use in either of the two alternants. In the previous sections I already identified factors that have a bearing on the alternation. Especially in the *schicken/senden* analysis, we saw that, apart from information-structural factors such as Pronominality of RECIPIENT (which adds to the short-before-long principle), Sense is significantly associated with either of the alternants. This raises the question whether the factor Sense also influences the alternation with the complex verbs. According to DWDS, these verbs have notably less senses than the noncomplex verbs studied in Sections 5.1 and 5.2. It is therefore appropriate to determine whether the association might even be semantic in the strict sense, i.e., whether IOC and POC can be situated on the level of encoded meanings. Because there is no previous research to base this assumption on, I conducted two preliminary qualitative studies of *ausliefern* and *preisgeben*.

With regard to *ausliefern*, if we consider the ditransitive DWDS sense “jmdn., etw. in jmds. Gewalt übergeben, besonders von einem Land ins andere of *ausliefern*” ‘to hand someone over to someone’s power, especially extradite from one country to another’, POC seems to be especially used when a concrete, physical transfer is involved (“extradite, deliver”) and IOC when the transfer is more abstract (“expose”), compare:

jmdn. dem Gericht, dem Richter, der Strafe, der Rache ausliefern (= überantworten)
jmdn. an die Behörden, an einen Staat, an den Feind ausliefern
jmdn. dem Schicksal, der Willkür, dem Tode ausliefern (= preisgeben)

‘give someone over to the judicial authorities, to the judge, to punishment, to revenge’
 ‘extradite someone to the authorities, to the state, to the enemy’
 ‘expose someone to fate, to arbitrariness, to death’

Two DeReKo exports of 100 sentences with the verb *ausliefern* (compare selected examples in (167) for “extradite, deliver” and (168) for “expose”) confirm this difference.

- (167) *[Deutsche] wurden nicht <an die USA> ausgeliefert.*
 ‘Germans were not extradited to the United States.’
[Listen von Decknamen] wurden <an das Kanzleramt> ausgeliefert.
 ‘Lists of aliases were delivered to the Chancellery.’
[Die Produktion] wurde <an die Händler im In- und Ausland> ausgeliefert.
 ‘The production was delivered to dealers at home and abroad.’

- (168) *[Sie] sind <einem gewissen Gruppendruck> ausgeliefert.*
 ‘They are exposed to a certain group pressure.’
[Die Institution] wird <machtsbewussten Populisten> ausgeliefert.
 ‘The institution is subjected to power-conscious populists.’
[Sie] sind <großen Gefahren> ausgeliefert.
 ‘They are at great risk.’

However, attestations such as (169) prove that the distinction between concrete and abstract transfer is not an encoded feature of POC and IOC with *ausliefern*, given that concrete transfer can also be expressed in IOC, and abstract transfer in POC (170):

- (169) *[Verdächtige] werden <an Kriegsverbrechertribunale> ausgeliefert.*
 ‘Suspects are extradited to war crime tribunals.’
Es bleiben zwölf Inhaftierte, [welche] die Parteien <Den Haag> als mutmassliche Kriegsverbrecher ausliefern wollen.
 ‘There are still twelve detainees whom the parties want to extradite to The Hague as alleged war criminals.’
- (170) *Vielleicht weil sie krank sind, Insassen eines Irrenhauses, vielleicht weil [die Welt] krank ist, hoffnungslos ausgeliefert <an dämonische Machtgier>.*
 ‘Maybe because they are sick, inmates of a madhouse, maybe because the world is sick, hopelessly at the mercy of demonic lust for power.’

Similarly, with the verb *preisgeben*, IOC seems to be preferred when the verb is combined with an abstract third argument such as *Verfall* ‘deterioration’, *Verrottung*

‘decay’, *Hungertod* ‘starvation’ etc. Conversely, concrete arguments that designate an individual or a collective tend to occur with POC, e.g., *an einen Betrüger preisgeben* ‘reveal to a fraudster’, *an die Konkurrenz preisgeben* ‘give away to the competitors’. Again, however, counterexamples to these tendencies are found in the corpus, indicating that the difference between IOC and POC is not encoded over this sense distinction with the verb *preisgeben* and that multiple factors probably play a role in the alternation.

Most of the other verbs did not display such clear tendencies, which adds to the need to carry out careful quantitative analyses rather than relying on introspection. The objective of the following quantitative analyses of the complex verbs is, therefore, again to determine the factors that are associated with either of the two alternants. As explained in Section 4.1.3.3, I have grouped together the *-geben* and the complex *-schicken/send* verbs while adding a further group of verbs with *ausleihen*, *verleihen* and *verkaufen*. The next section therefore consists of three subsections in which the results of the statistical analyses are presented.

5.3.2 Complex *-geben* verbs

5.3.2.1 Constituent order

As can be inferred from Table 27, the verb *preisgeben* contributes to the complex *-geben* dataset with only 4 POC instances, but this shortage of data is compensated by the verb *weitergeben* that contributes with 174 POC instances, so that a balanced dataset is achieved with regard to the complex *-geben* dataset as a whole. Observe the varying constituent orders, with a fairly even distribution of IOC(R-T) (21%) vs. IOC(T-R) (27%). For certain verbs (e.g., *preisgeben*, *übergeben* and *weitergeben*) IOC(T-R) is even more frequent than IOC(R-T). By contrast, in POC, the T-R constituent order is predominant (51%) and POC(R-T) with all five complex verbs is underrepresented (1%) in comparison to POC(T-R).

Table 27 Bivariate frequencies and proportions (verb by Cx and constituent order) in the complex *-geben* dataset

	IOC(R-T)	IOC(T-R)	POC(R-T)	POC(T-R)	total
<i>abgeben</i>	8 (11%)	7 (9%)	3 (4%)	58 (76%)	76 (100%)
<i>preisgeben</i>	9 (10%)	74 (85%)	0 (0%)	4 (5%)	87 (100%)
<i>übergeben</i>	55 (21%)	87 (34%)	3 (1%)	113 (44%)	258 (100%)
<i>weitergeben</i>	6 (3%)	11 (6%)	1 (1%)	173 (91%)	191 (100%)
<i>zurückgeben</i>	86 (47%)	39 (21%)	1 (1%)	58 (32%)	184 (100%)
total	164 (21%)	218 (27%)	8 (1%)	406 (51%)	796 (100%)

5.3.2.2 Statistical analysis

Based on the ANOVA in Table 28, there is evidence for the effect of seven factors in the (resampled) complex *-geben* dataset. In order of importance the significant factors are: (1) Source, (2) Verb, (3) Givenness of THEME, (4) Pronominality of RECIPIENT, (5) Pronominality of THEME, (6) Givenness of RECIPIENT, (7) Propernounhood of RECIPIENT. Observe, that for complex *-geben*, the factor Sense was not operationalised as a regular factor, but as a random factor, because there was insufficient variability.

Table 28 The complex *-geben* ANOVA

Single term deletions

	Df	AIC	LRT	Pr(Chi)	
<none>		680.75			
Verb	4	696.77	24.024	7.901e-05	***
ThemeLogDice	2	679.10	2.345	0.309634	
Source	3	718.18	43.434	1.990e-09	***
Voice	1	679.24	0.494	0.482033	
DenoClass	2	678.79	2.042	0.360223	
LengthDiff	1	679.85	1.099	0.294480	
AgentAnim	3	680.14	5.388	0.145468	
ThemePron	1	686.20	7.450	0.006344	**
ThemeGiv	2	686.31	9.555	0.008419	**
ThemeAnim	1	680.47	1.719	0.189782	
ThemeDef	1	682.40	3.647	0.056162	.
ThemeConc	2	677.91	1.159	0.560117	
RecPron	1	687.22	8.468	0.003614	**
RecGiv	2	683.67	6.919	0.031439	*
RecAnim	3	681.09	6.339	0.096243	.
RecDef	1	681.14	2.392	0.121973	
RecConc	1	678.80	0.049	0.825366	
RecPerson	1	679.27	0.523	0.469588	
RecSync	1	679.27	0.519	0.471266	
RecNum	1	680.99	2.237	0.134737	
RecProperNoun	1	685.30	6.553	0.010469	*

Table 29 The complex *-geben* model⁶⁷

```
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']
Family: binomial ( logit )
Formula: Cx ~ Verb + ThemeLogDice + Source + Voice + DenoClass + LengthDiff +
  AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
  ThemeConc + RecPron + RecGiv + RecAnim + RecDef + RecConc +
  RecPerson + RecSync + RecNum + RecProperNoun + (1 | Sense)
Data: gcomp
Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 2e+05))
```

AIC	BIC	logLik	deviance	df.resid
680.8	853.9	-303.4	606.8	759

scaled residuals:

⁶⁷ Bootstrapped C-index is equal to 0.93 (2000 bootstrap samples). There is some mild collinearity between Voicepassive (VIF = 10) and AgentAnimninf (VIF = 11), but in all, collinearity did not affect the interpretation of the effects observed in the model, see Appendix C for more model diagnostics.

	Min	1Q	Median	3Q	Max
	-4.3775	-0.3775	0.0911	0.4071	4.7184

Random effects:

Groups Name	Variance	Std.Dev.
Sense (Intercept)	0.7941	0.8911

Number of obs: 796, groups: Sense, 19

Fixed effects:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.62953	1.73411	0.363	0.716585
Verbprsg	-3.85795	1.03256	-3.736	0.000187 ***
Verbübrg	-2.41034	0.57775	-4.172	3.02e-05 ***
Verbwtrg	0.77337	0.78237	0.988	0.322913
Verbzrck	-2.03673	0.99188	-2.053	0.040034 *
ThemeLogDicehigh	0.17449	0.30418	0.574	0.566217
ThemeLogDicelow	0.47889	0.31728	1.509	0.131211
SourceCH	-1.61967	0.37410	-4.330	1.49e-05 ***
SourceD	0.10816	0.31617	0.342	0.732290
Sourcew	-1.34917	1.66425	-0.811	0.417551
Voicepassive	0.55876	0.80163	0.697	0.485782
DenoClassconcrete	0.64033	0.44581	1.436	0.150912
DenoClasspropositional	0.30322	0.95748	0.317	0.751482
LengthDiff	0.03422	0.03268	1.047	0.295092
AgentAnimindv	-0.48371	0.33052	-1.463	0.143333
AgentAniminf	-0.63678	0.81157	-0.785	0.432677
AgentAniminm	-1.77114	0.85367	-2.075	0.038011 *
ThemePronpronominal	-0.99631	0.37078	-2.687	0.007208 **
ThemeGivacc	0.48422	0.30693	1.578	0.114653
ThemeGivnew	-0.46466	0.27733	-1.675	0.093843 .
ThemeAniminm	0.76427	0.58086	1.316	0.188250
ThemeDefindefinite	-0.46898	0.24479	-1.916	0.055383 .
ThemeConcconcrete	-0.13111	0.43296	-0.303	0.762032
ThemeConcpropositional	0.91473	0.99641	0.918	0.358607
RecPronpronominal	-1.61733	0.58945	-2.744	0.006073 **
RecGivacc	-0.21581	0.32651	-0.661	0.508648
RecGivnew	0.49933	0.27203	1.836	0.066426 .
RecAniminm	-1.42987	0.68291	-2.094	0.036278 *
RecAnimindv	0.06681	0.30692	0.218	0.827668
RecAnimundr	0.26649	0.38231	0.697	0.485762
RecDefindefinite	0.59394	0.38515	1.542	0.123046
RecConcconcrete	-0.14591	0.65479	-0.223	0.823663
RecPersonnonlocal	0.97948	1.42131	0.689	0.490738
RecSyncnonexplicit	0.27929	0.38740	0.721	0.470956
RecNumsingular	-0.42614	0.28412	-1.500	0.133644
RecProperNounpropernoun	0.85588	0.33584	2.548	0.010821 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Overall, as shown in the effect plots in Figure 21, Swiss and Wikipedia sources (but observe the large Confidence Interval for Wikipedia) show a strong preference for IOC compared to German and Austrian sources, although, as mentioned before, this factor has to be interpreted with caution due to the fact that the source indications do not necessarily tally with the language varieties. Nevertheless, the effect shows the same tendency that in Swiss German IOC is the preferred variant in comparison to POC. More importantly, the factor Verb has a bearing on the realisation of either variant, indicating that certain verbs preferably occur in one alternant and confirming the frequency counts in Table 27. The effect plots show that *preisgeben* has a preference for IOC, and so do *übergeben* and *zurückgeben*. Conversely, *abgeben* and *weitergeben* are strongly associated with POC.

Two of the five other main effects concern the THEME and three the RECIPIENT: in the complex *-geben* dataset, new THEMES and accessible or given RECIPIENTS tend to be associated with IOC, and accordingly given and accessible THEMES and new RECIPIENTS are associated with POC. Moreover, according to the analysis, pronominal THEMES are associated with IOC, but pronominal RECIPIENTS too are associated with IOC. These seem to be contradictory effects, because pronominal (hence short) constituents tend to precede long ones according to Behaghel's Law of Increasing Constituents. However, in the complex dataset these effects need not contradict each other, if both constituent orders are considered. IOC(T-R) order occurs with a similar frequency as IOC(R-T), so that the pronominality effect for THEMES probably involves sentences with T-R order, whereas the pronominality effect for RECIPIENTS has to be considered in R-T order. Both findings comply with Behaghel's Law of Increasing Constituents, as short constituents tend to precede long ones.

Moreover, RECIPIENTS that are common nouns are associated with IOC whereas proper nouns tend to occur in POC. In other words, apart from the factors Source and Verb, four effects concern pronominality and givenness of the arguments. However, it is remarkable that there is no significant effect of RECIPIENT animacy, although RECIPIENT animacy is generally considered to be a determining factor for the difference between the English DOC and POC. I will return to this finding in the discussion section. Below, I present some typical examples, cf. (171) and (172).

- (171) *Wenn es noch mehr werden, dann übergeb ich [sie]*
 if there are more then hand over.PRS.1SG I.NOM they.ACC
<der Bankleitung>
 the.DAT bank management
 'If there are more, I will hand them (= the postcards) over to the bank management.'
 (Swiss Source, Verb *übergeben*, given, pronominal THEME, given RECIPIENT which is a common noun; predicted probability = 47% IOC) UID 2287
- (172) *Nach fast 18 Jahren gab Horst Kolb [den Vorsitz*
 after almost 18 years give.IPFV.3SG Horst Kolb.NOM the. ACC chairmanship
des BdS-Ortsverbandes] *<an seinen Stellvertreter Rolf Edelmann>* *ab.*
 of the BdS branch to his.ACC deputy Rolf Edelmann particle
 'After almost 18 years, Horst Kolb handed over the chairmanship of the BdS branch to his deputy Rolf Edelman.'
 (German Source, Verb *abgeben*, accessible THEME, nominal RECIPIENT, nominal THEME, accessible RECIPIENT, which is a proper noun; predicted probability = 73% POC) UID 2947

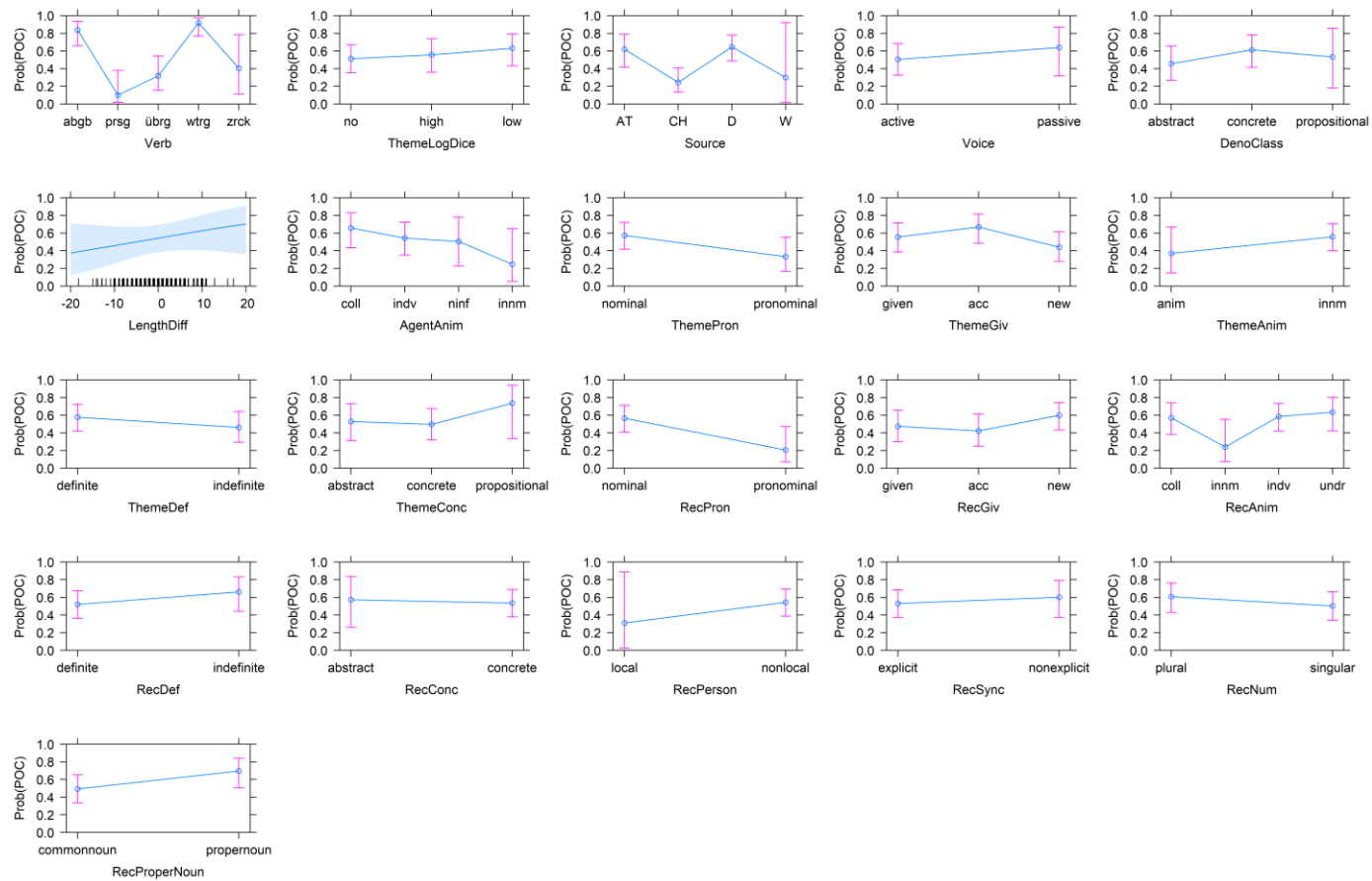


Figure 21 Effect plots for the complex *-geben* dataset⁶⁸

⁶⁸ Clarification of the abbreviations used in the effect plot: abgb = abgeben, prsg = preisgeben, übrg = übergeben, wtrg = weitergeben, zrck = zurückgeben; coll = collective, indiv = individual, ninf = not inferred, innm = inanimate; acc = accessible; anim = animate; undr = underspecified.

The best linear unbiased predictions (BLUPs) of the random effects of Sense are given in Figure 22:

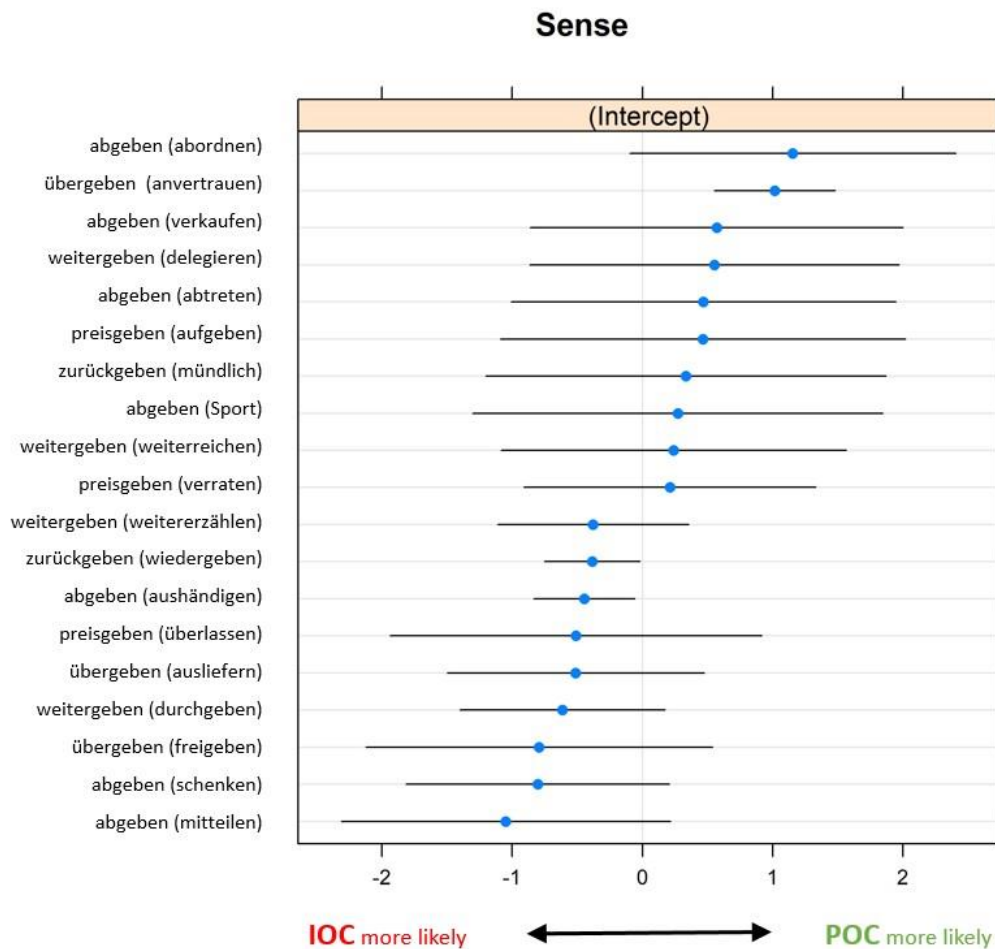


Figure 22 Random effect Sense in the complex *-geben* dataset (Verbs have been added to the plot for the sake of clarity)

Figure 22 indicates that all complex *-geben* verbs have senses that may either be associated with IOC or with POC. For instance, *abgeben* in the Senses “abordnen”, “verkaufen” and “abtreten” is associated with POC, whereas there is a preference towards IOC with the Senses “schenken” and “mitteilen”. The verb *übergeben* seems to prefer IOC in the sense “freigeben” but POC in the sense “anvertrauen”. *Zurückgeben* tends towards IOC when used literally in the sense “wiedergeben”, whereas POC is the preferred variant, albeit with a very large CI, when the verb is used propositionally with the feature “mündlich”. Still, it must be emphasised that for a number of senses, these results are based on scarce data (cf. Table 27). However, certain senses are manifestly associated with IOC whereas others clearly tend towards POC. This conclusion may be interpreted as evidence that a refinement of the finding that the alternation is associated with the ‘root’ meaning of the verb itself (cf. Rappaport-Hovav and Levin 2008) is called for. It is an indication that the alternation between IOC and POC rather pivots on the individual

verbs' senses than on their encoded verb meaning (cf. Chapter 3). To evaluate this assumption more explicitly, an individual Conditional Inference Tree was additionally fitted for each verb. This subgroup analysis explicitly explores the possibility that Sense is the main motivating factor. The CITs are ordered according to their predictive qualities: first the CITs that predict the alternation well, followed by trees that have less or no predictive qualities.

CITs with good predictive qualities

abgeben

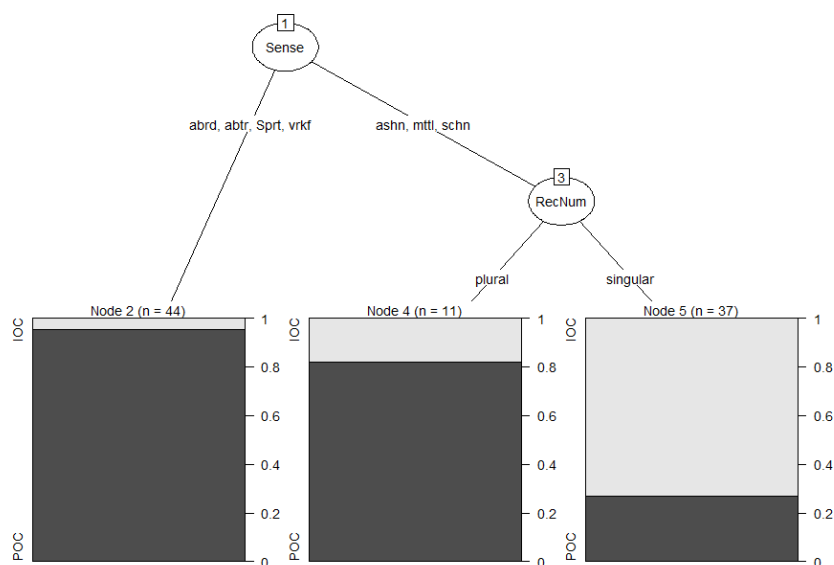


Figure 23 CIT for *abgeben*⁶⁹

Table 30 Confusion matrix. Correct within sample prediction rate = 85%.

Predicted	Observed	
	IOC	POC
IOC	27	10
POC	4	51

The confusion matrix in Table 30 indicates that 85% of the predictions are correct. The CIT for *abgeben* shows that POC is associated with the Senses “abordnen”, “abtreten”, “Sport” and “verkaufen” (cf. Node 2), cf. (173) through (176) and with the Senses “aushändigen”, “mitteilen” and “schenken” in combination with a plural RECIPIENT (Node

⁶⁹ Clarification of the abbreviations used in the CIT: abrd = abordnen, abtr = abtreten, Sprt = Sport, vrkf = verkaufen, ashn = aushändigen, mitll = mitteilen, schn = schenken.

4), cf. (177) and (178). With the latter senses, IOC is predominantly associated with singular RECIPIENTS (Node 5), cf. (179), (180) and (181). Below, I present some typical examples that illustrate these effects. In sum, the factor Sense constitutes the first split point and is the best predictor for the alternation in combination with the factor Number of RECIPIENT.

- (173) *Eine andere Möglichkeit ist es, [Aufgaben] <an ambulante Hilfsdienste> abzugeben.*
 ‘Another option is to delegate tasks to external services.’
 (Sense “abordnen” – Node 2) UID 2997
- (174) *Sie gibt [ihr Ortsratsmandat] <an Ralf Scharringhausen> ab.*
 ‘She is relinquishing her local council mandate to Ralf Scharringhausen.’
 (Sense “abtreten” – Node 2) UID 2966
- (175) *Ganz knapp musste Helga Mrotzek im dritten Satz [ihr Spiel] <an den Gegner> abgeben.*
 ‘Helga Mrotzek conceded to the opponent very closely in the third set.’
 (Sense “Sport” – Node 2) UID 2950
- (176) *Der Blutspendedienst gibt [das Blut] dann zu fairen Preisen <an die Krankenhäuser> ab.*
 ‘The blood donation service then delivers the blood to the hospitals at fair prices.’
 (Sense “verkaufen” – Node 2) UID 2947
- (177) *Gemeinsam mit dem Kulturministerium beschloss man, je [eine Kamera] abzugeben <an die 10- bis 14-jährigen Klassenbesten>.*
 ‘Together with the Ministry of Culture, it was decided to hand over one camera each to the 10- to 14-year-old top pupils.’
 (Sense “aushändigen” – Plural RECIPIENT – Node 4) UID 3004
- (178) *Jeden Tag will Mr. X [Tausend Pfund] <an zufällige Begegnungen> abgeben.*
 ‘Every day Mr. X wants to give away £ 1,000 to people he randomly encounters.’
 (Sense “schenken” – Plural RECIPIENT – Node 4) UID 2957
- (179) *[Problemstoffe] sind <dem Sammelorgan> abzugeben.*
 ‘Problem substances are to be given to the collecting member.’
 (Sense “aushändigen” – Singular RECIPIENT – Node 5) UID 3007
- (180) *Der Ausschuss gibt <dem Fakultätsrat> [eine Empfehlung] ab.*
 ‘The committee makes a recommendation to the faculty board.’
 (Sense “mitteilen” – Singular RECIPIENT – Node 5) UID 3035

- (181) *Als Fahrer musste er [60 Prozent seiner Einnahmen] <seinem Arbeitgeber> abgeben.*
 ‘As a driver, he had to give up 60 percent of his take to his employer.’
 (Sense “schenken” – Singular RECIPIENT – Node 5) UID 3014

preisgeben

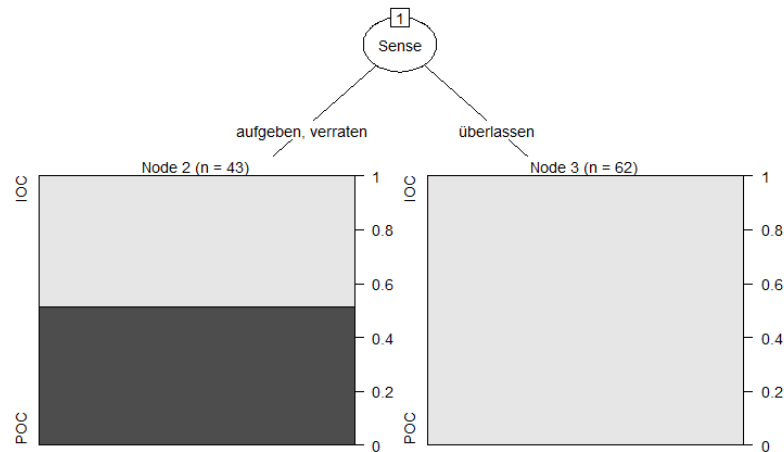


Figure 24 CIT for *preisgeben*

Table 31 Confusion matrix. Correct within sample prediction rate = 80%.

Predicted	Observed	
	IOC	POC
IOC	62	0
POC	21	22

With regard to the verb *preisgeben*, the CIT in Figure 24 indicates that Sense is the best predictor for the alternation, as was already surmised in Section 5.3.1. All 62 instances of the sense “überlassen” (182) (Node 3) are realised in IOC and correctly predicted (cf. confusion matrix in Table 31), whereas the senses “aufgeben” and “verraten” (Node 2) are equally associated with both alternants, cf. (183) and (184).

- (182) *Rust hat [die UdSSR] <der Lächerlichkeit> preisgegeben.*
 ‘Rust held up the USSR to ridicule.’
 (Sense “überlassen” – Node 3) UID 3065
- (183) *Es geht darum, daß Lord Patten [Details aus einem Geheimabkommen] <an Journalisten> preisgegeben habe.*
 ‘It is about Lord Patten disclosing details of a secret deal to journalists.’
 (Sense “verraten” – Node 2) UID 3053




- (184) *Auf der anderen Seite wird er [die wirtschaftliche Führung dieser Unternehmen] zunehmend <privaten Anbietern> preisgeben müssen.*

‘On the other hand, he will increasingly have to relinquish the economic management of these companies to private providers.’

(Sense “aufgeben” – Node 2) UID 3099

Strikingly, an additional qualitative evaluation of the 62 IOC attestations with the sense “überlassen” confirms the outcome of the preliminary analysis in Section 5.3.1. All attestations indeed have an abstract RECIPIENT such as *Verfall* ‘decay’, *Verrottung* ‘rotting’, *Verelendung* ‘impoverishment’, *Hungertod* ‘starvation’, *Lächerlichkeit* ‘ridiculousness’, *Vergessen* ‘forgetting’, *Vandalismus* ‘vandalism’, whereas concrete RECIPIENTS only occur with the Senses “aufgeben” and “verraten” in POC: *an einen Betrüger* ‘to a fraudster’, *an die Attentäter* ‘to the assassins’, *an die Konkurrenz* ‘to the competition’, *an die Behörden* ‘to the authorities’, *an China* ‘to China’, *an die USA* ‘to the United States’, cf. Table 32.

Table 32 Abstract-concrete continuum observed in *preisgeben*

abstract “überlassen” resultative state	resultstate.person (dot.object)	concrete “aufgeben, verraten” person
		
<i>dem Verfall</i>	<i>der Öffentlichkeit</i>	<i>niemandem, allen, uns</i>
<i>der Verrottung</i>	<i>der Lächerlichkeit</i>	<i>den Barbaren</i>
<i>der Verelendung</i>	<i>dem Vandalismus</i>	<i>privaten Anbietern</i>
<i>dem Hungertod</i>	<i>dem Vergessen</i>	<i>dem römischen Richtern</i>
		
		<u>individual:</u> <i>an einen Betrüger</i> <i>an die Attentäter</i> <u>collective:</u> <i>an die Konkurrenz</i> <i>an die Behörden</i> <u>underspecified:</u> <i>an China, an die USA</i>

There seems to be a continuum from abstract RECIPIENTS that express a resultative state to concrete RECIPIENTS which are persons or collectivities. IOC covers the whole continuum from genuinely abstract resultative states (to the left) over RECIPIENTS that can be interpreted metonymically as being instigated by or referring to persons (like: *der Öffentlichkeit preisgeben* = *allen Menschen* ‘make publicly available’) to persons (to the right). POC is reserved for concrete RECIPIENTS and very few RECIPIENTS that are underspecified

“dot.objects”, i.e., polysemous lexemes such as *book*, which can designate the physical object or the textual information, or both, cf. Pustejovsky’s (1995: 118) [info.physobj]. Moreover, the verb *preisgeben* seems to be associated with a negative connotation. Most of the RECIPIENTS have a negative feature themselves: *niemandem* ‘to nobody’, *den Barbaren* ‘to the Barbarians’, *an einen Betrüger* etc. In case the complement is neutral or positive (*allen* ‘to all’, *uns* ‘to us’, *privaten Anbietern* ‘to private providers’), the verb *preisgeben* generally coerces it into a negative interpretation, compare e.g., the adverse reading of *an die Behörden* in (185):

- (185) *Auch drohten die Bauern jedem den Hof anzuzünden, der [Informationen über seinen Aufenthaltsort] <an die Behörden> preis gab.*

‘The peasants also threatened to set fire to the farm of anyone who gave up information about his whereabouts to the authorities.’ UID 3060

übergeben

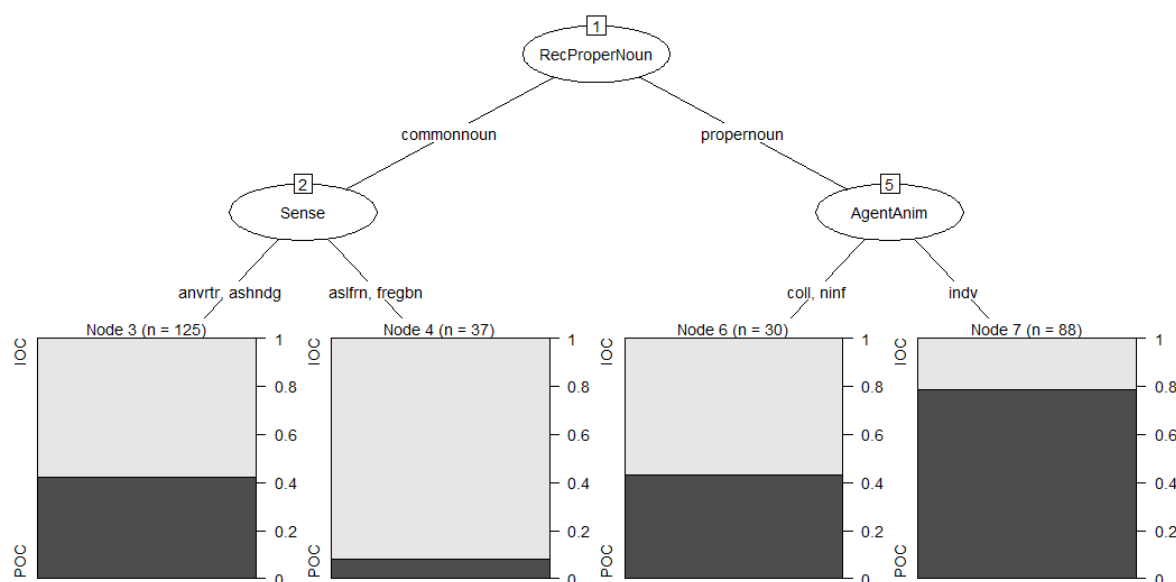


Figure 25 CIT for *übergeben*⁷⁰

Table 33 Confusion matrix. Correct within sample prediction rate = 69%.

Predicted	Observed	
	IOC	POC
IOC	123	69
POC	19	69

⁷⁰ Clarification of the abbreviations used in the CIT: *anvrtr* = anvertrauen, *ashndg* = aushändigen, *aslfn* = ausliefern, *fregbn* = freigeben.

The confusion matrix in Table 33 indicates a sample prediction rate of 69%. With regard to *übergeben*, Figure 25 indicates that POC is associated with RECIPIENTS that are proper nouns in combination with individual AGENTS (186) (Node 7). By contrast, IOC is the preferred alternant with collective or non inferrable AGENTS (187) (Node 6), and with common nouns (188) and (189) (Nodes 3 and 4).

(186) *Gestern übergab Fleurop-Präsident Ludwig Angeli [den Emotion Award] <an Küchenmeister Ralf Zacherl>.*

‘Yesterday, Fleurop President Ludwig Angeli presented the Emotion Award to kitchen master Ralf Zacherl.’

(RECIPIENT which is a proper noun, individual AGENT– Node 7) UID 2390

(187) *[Ein neuer Einsatzleitwagen] wurde gestern <der Feuerwehr Velpke> übergeben.*

‘A new command and control vehicle was handed over yesterday to the Velpke fire department.’

(RECIPIENT which is a proper noun, non inferrable AGENT – Node 6) UID 2350

(188) *Die Kaufhaus-Angestellten übergaben [ihn] <der Polizei>.*

‘The department store employees handed him over to the police.’

(RECIPIENT which is a common noun, Sense “ausliefern” – Node 4) UID 2351

(189) *Ebner wird <den Bauern> [prächtiges Vieh] übergeben.*

‘Ebner will consign magnificent cattle to the farmers.’

(RECIPIENT which is a common noun, Sense “anvertrauen” – Node 3) UID 2406

zurückgeben

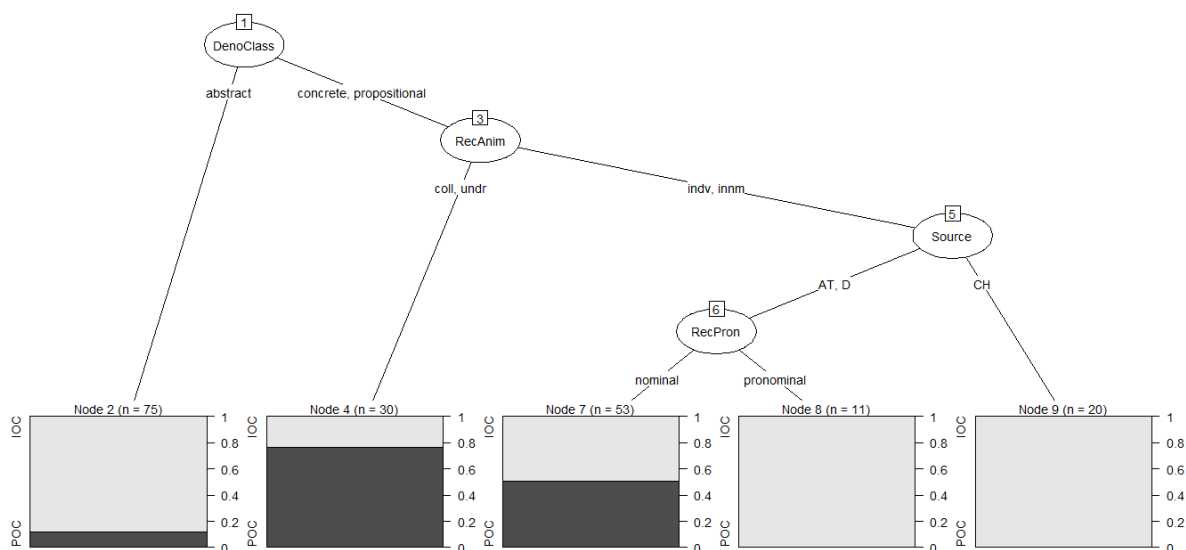


Figure 26 CIT for *zurückgeben*

Table 34 Confusion matrix. Correct within sample prediction rate = 78%.

Predicted	Observed	
	IOC	POC
IOC	97	9
POC	33	50

The confusion matrix in Table 34 indicates a correct prediction rate of 78%. The CIT for *zurückgeben* in Figure 26 shows that POC is the preferred alternant with concrete or propositional denotational class and collective or underspecified RECIPIENTS (190) (Node 4). Observe that certain nodes are exclusively realised in IOC, viz. when concrete or propositional denotational class is in combination with individual or inanimate RECIPIENTS and stems from a Swiss source (191) (Node 9) or from a German or Austrian source and with a pronominal RECIPIENT (192) (Node 8). With nominal RECIPIENTS, this verb seems to have no preference (Node 7). Abstract denotational class is predominantly associated with IOC (Node 2, (193)).

- (190) *Etliche Zeit später wurde [die Maschine] sichergestellt und <an die Firma> zurückgegeben.*
‘The machine was secured some considerable time later and returned to the company.’
(concrete Denotational Class, underspecified RECIPIENT - Node 4) UID 2743
- (191) *Von den 250 Schmuckstücken konnten bereits [34] <ihren Besitzern> zurückgegeben werden.*
‘Of the 250 pieces of jewelry, 34 have already been returned to their owners.’
(concrete Denotational Class, individual RECIPIENT and Swiss Source - Node 9) UID 2563
- (192) *[Das Portemonnaie] gaben sie <ihm> laut Lindner zurück.*
‘According to Lindner, they returned the wallet to him.’
(concrete Denotational Class, individual, pronominal RECIPIENT and German Source - Node 8) UID 2684
- (193) *Gauck wird <dem Amt> [ein Stück Sicherheit und Seriosität] zurückgeben.*
‘Gauck will give the function back some certainty and seriousness.’
(abstract Denotational Class - Node 2) UID 2571

CIT with poor predictive quality *weitergeben*

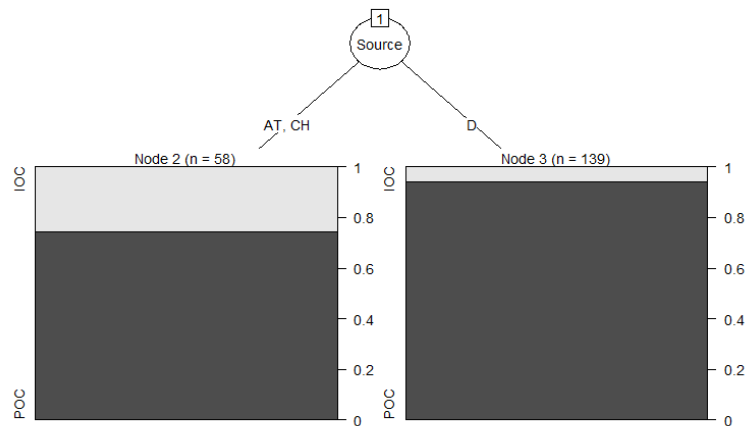


Figure 27 CIT for *weitergeben*

Table 35 Confusion matrix. Correct within sample prediction rate = 88%.

Predicted	Observed	
	IOC	POC
IOC	0	0
POC	23	174

Whereas with regard to the verb *weitergeben*, POC has a high prediction score (cf. Table 35), IOC, e.g., (194), is not predicted. In fact, the significant factor Source does not add anything to the prediction. Note that the confusion matrix is based on the majority outcome following the rules of the CIT. Thus, for *weitergeben*, whatever the path one takes in the tree (cf. Figure 27), the majority outcome is always “POC”. Yet, the tree indicates that Source is statistically significant. Thus, with an Austrian or Swiss source there is a statistically lower probability for POC than with a German source, which nearly always takes POC. This is an interesting tendency to observe, but Source does not add to the baseline prediction rate of a model that always predicts POC for *weitergeben*. The accuracy of the fitted model is the same as the baseline, that is: 88% (= 174/(23+174)). Recall that it was clear from the outset (cf. the frequency counts in Table 27) that *weitergeben* is mostly used in POC, cf. (195).

(194) [Die Stämme] werden hydraulisch ergriffen und <der Schälmaschine> weitergegeben.

‘The logs are gripped hydraulically and passed on to the peeling machine.’

(Swiss Source – Node 2) UID 2872

- (195) [Dieses Gefühl] wolle er <an andere> weitergeben.
 ‘He wanted to pass on this feeling to others.’
 (German Source – Node 3) UID 2832

5.3.3 Complex -schicken and -senden verbs

5.3.3.1 Constituent order

Analogously to the complex -geben dataset it was found that in IOC both constituent orders occur in fairly equal numbers with complex -schicken and -senden verbs whereas the R-T constituent order is extremely infrequent in POC (cf. Table 36). Most -schicken and -senden complex verbs frequently occur in POC(T-R), amounting to 96% of all attestations for weiterschicken and 82% for einsenden and zurücksenden. The verb that shows the largest variation between IOC and POC and even a tendency towards IOC, is übersenden. The IOC/POC proportions for zurückschicken and einschicken are roughly ¼ IOC vs. ¾ POC (27% IOC vs. 73% POC and 22% IOC vs. 78% POC). This ratio corresponds to the overall proportion for all verbs taken together: 24% IOC vs. 76% POC.

Table 36 Bivariate frequencies and proportions (verb by Cx and constituent order) in the complex -schicken/senden dataset

	IOC(R-T)	IOC(T-R)	POC(R-T)	POC(T-R)	total
<i>einschicken</i>	20 (11%)	20 (11%)	4 (2%)	137 (76%)	181 (100%)
<i>einsenden</i>	14 (11%)	8 (6%)	1 (1%)	108 (82%)	131 (100%)
<i>übersenden</i>	58 (38%)	42 (27%)	2 (1%)	52 (34%)	154 (100%)
<i>weiterschicken</i>	0 (0%)	6 (3%)	1 (1%)	179 (96%)	186 (100%)
<i>zurückschicken</i>	36 (20%)	12 (7%)	1 (1%)	129 (72%)	178 (100%)
<i>zurücksenden</i>	25 (10%)	18 (8%)	1 (0%)	195 (82%)	239 (100%)
TOTAL	153 (14%)	106 (10%)	10 (1%)	800 (75%)	1069 (100%)

5.3.3.2 Statistical analysis

A logistic regression analysis provides evidence for the effect of seven factors (cf. Figure 28). In order of importance the factors are: (1) Verb, (2) Pronominality of RECIPIENT,

(3) Source, (4) Syncretism of RECIPIENT, (5) Animacy of RECIPIENT, (6) Propernounhood of RECIPIENT, (7) Number of RECIPIENT. The model⁷¹ is presented in Table 37.

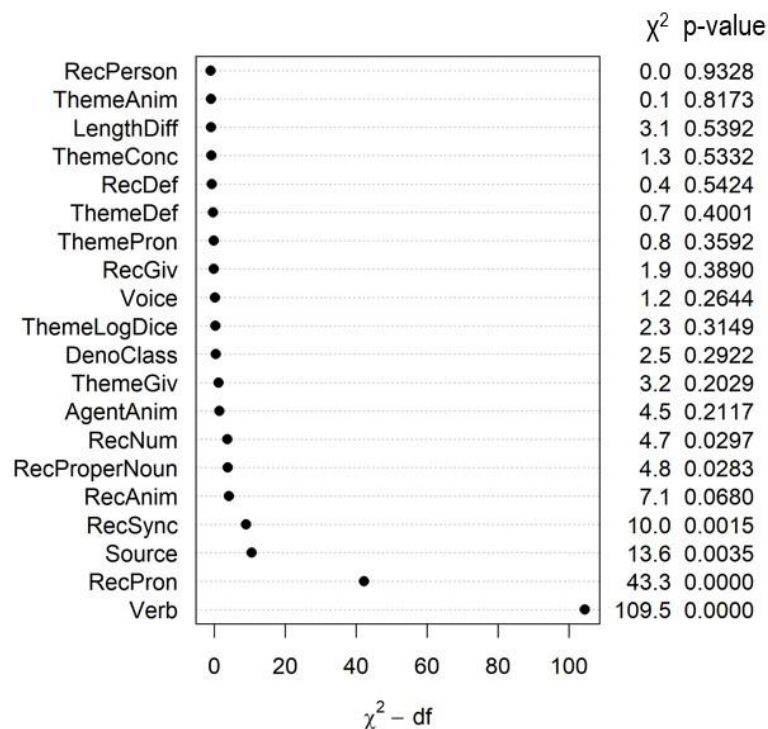


Figure 28 ANOVA for complex -schicken/sendem

Table 37 The complex -schicken/sendem model

Logistic Regression Model

```
lrm(formula = Cx ~ Verb + ThemeLogDice + Source + Voice + DenoClass +
    AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
    ThemeConc + ThemeLogDice + RecPron + RecGiv + RecAnim + RecDef +
    RecPerson + RecSync + RecNum + RecProperNoun + rcs(LengthDiff),
    data = sscomp, x = TRUE, y = TRUE, penalty = p$penalty)
```

Penalty factors

simple	nonlinear	interaction	nonlinear.interaction
1.78	1.78	1.78	1.78

		Model Likelihood		Discrimination		Rank Discrim.	
		Ratio Test		Indexes		Indexes	
Obs	1069	LR chi2	457.67	R2	0.498	C	0.886
IOC	259	d.f.	30.022	g	1.986	Dxy	0.772
POC	810	Pr(> chi2)	<0.0001	gr	7.289	gamma	0.772
max deriv	2e-12	Penalty	23.50	gp	0.274	tau-a	0.284
				Brier	0.103		

⁷¹ The bootstrap-validated C-index equals 0.86 (Somer's Dxy = 0.73), which indicates a very good predictive quality. The VIFs indicate a light collinearity between DenoClass and ThemeConc: DenoClass=concrete and propositional each equal 17 and ThemeConc = concrete equals 14 whereas propositional equals 13, see Appendix D for more model diagnostics.

	Coef	S.E.	wald z	Pr(> Z)	Penalty	Scale
Intercept	3.0540	1.4254	2.14	0.0321	0.0000	
Verb=ensn	0.7444	0.3635	2.05	0.0406	1.2179	
Verb=übr	-2.1563	0.3435	-6.28	<0.0001	1.2179	
Verb=wtr	1.0836	0.4446	2.44	0.0148	1.2179	
Verb=zrcksc	-0.0151	0.3247	-0.05	0.9628	1.2179	
Verb=zrcksn	0.3586	0.3384	1.06	0.2894	1.2179	
ThemeLogDice=high	0.7085	0.6111	1.16	0.2463	1.0893	
ThemeLogDice=low	-0.1969	0.2381	-0.83	0.4083	1.0893	
Source=CH	-1.1177	0.3635	-3.07	0.0021	1.1554	
Source=D	-0.2733	0.3062	-0.89	0.3722	1.1554	
Source=W	0.1873	0.6626	0.28	0.7775	1.1554	
Voice=passive	-0.4945	0.4431	-1.12	0.2644	0.9434	
DenoClass=concrete	-0.2803	0.7756	-0.36	0.7178	1.0893	
DenoClass=propositional	0.1622	0.7776	0.21	0.8347	1.0893	
AgentAnim=indv	-0.4359	0.2829	-1.54	0.1233	1.1554	
AgentAnim=ninf	0.1839	0.4677	0.39	0.6942	1.1554	
AgentAnim=innm	0.5061	0.7394	0.68	0.4936	1.1554	
ThemePron=pronominal	0.2604	0.2840	0.92	0.3592	0.9434	
ThemeGiv=acc	-0.1303	0.2482	-0.52	0.5998	1.0893	
ThemeGiv=new	-0.4397	0.2498	-1.76	0.0783	1.0893	
ThemeAnim=innm	-0.1679	0.7265	-0.23	0.8173	0.9434	
ThemeDef=indefinite	-0.1802	0.2142	-0.84	0.4001	0.9434	
ThemeConc=concrete	0.4802	0.6914	0.69	0.4873	1.0893	
ThemeConc=propositional	0.1757	0.6800	0.26	0.7961	1.0893	
RecPron=pronominal	-2.2897	0.3479	-6.58	<0.0001	0.9434	
RecGiv=acc	0.0365	0.3033	0.12	0.9042	1.0893	
RecGiv=new	0.3044	0.2377	1.28	0.2004	1.0893	
RecAnim=indv	-0.3116	0.2693	-1.16	0.2472	1.1554	
RecAnim=undr	0.3210	0.2776	1.16	0.2475	1.1554	
RecAnim=innm	0.6316	0.7193	0.88	0.3799	1.1554	
RecDef=indefinite	0.2367	0.3885	0.61	0.5424	0.9434	
RecPerson=nonlocal	0.0335	0.3973	0.08	0.9328	0.9434	
RecSync=nonexplicit	-1.0609	0.3349	-3.17	0.0015	0.9434	
RecNum=singular	-0.5368	0.2469	-2.17	0.0297	0.9434	
RecProperNoun=propernoun	0.6287	0.2867	2.19	0.0283	0.9434	
LengthDiff	0.0619	0.0416	1.49	0.1367	5.2685	
LengthDiff'	-0.0832	0.1100	-0.76	0.4495	5.1127	
LengthDiff''	0.2249	1.4906	0.15	0.8801	0.5135	
LengthDiff'''	-0.1421	3.4153	-0.04	0.9668	0.2038	

Strikingly, apart from the factors Verb and Source, all other significant factors concern the RECIPIENT. According to Figure 29, *übersenden* is strongly associated with IOC, whereas the other complex *-schicken* and *-senden* verbs (*einschicken*, *einsenden*, *weeterschicken*, *zurückschicken*, *zurücksenden*) are associated with POC. Again, sentences from Swiss sources tend towards IOC in comparison to German, Austrian and Wikipedia sources, which tend towards POC, with however, also a large Confidence Interval for Wikipedia.

RECIPIENTS that are individual, pronominal, non-explicit, common nouns and singular are all associated with IOC, whereas nominals that are either collective, inanimate or underspecified, explicit NPs or proper nouns and plural nouns are associated with POC. Below, I present two typical examples with their predicted probabilities, (196) and (197).

- (196) *In der Anlage* *übersende* *ich* *<Ihnen>* *[zwei Lagepläne]*
in the attachment send.PRS.1SG I.NOM you.DAT two.ACC site plans
‘In the attachment I send you two site plans.’
(Verb *übersenden*, Swiss Source, pronominal, individual RECIPIENT that is a common noun;
predicted probability = 98% IOC) UID 1869
- (197) *[Diese]* *muss* *bis spätestens 31. Mai* *<an den BDS>* *eingeschickt werden.*
this.NOM must.PRS by May 31st to the.ACC BDS send.PTCP be.INF
‘This (postcard) must be sent to the BDS (Bund der Selbständigen= confederation of the
self-employed) by May 31st at the latest.’
(Verb *einschicken*, German Source, nominal, explicit, underspecified RECIPIENT that is a
proper noun; predicted probability = 97% POC) UID 1268

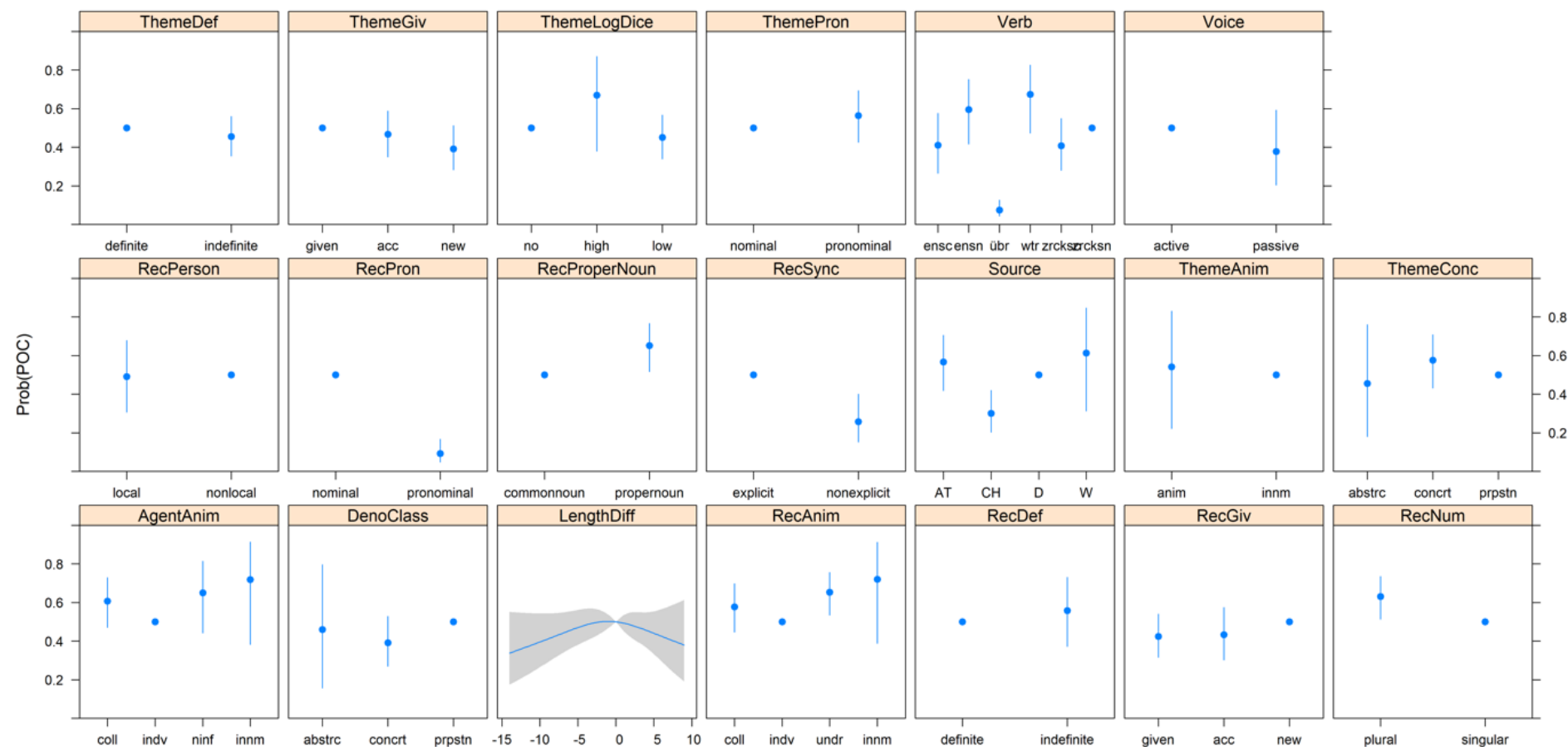


Figure 29 Effect plots for the complex *-schicken/sendern* dataset⁷²

⁷² Clarification of the abbreviations in the effect plots: acc = accessible; ensc = einschicken, ensn = einsenden, übr = übersenden, wtr = weiterschicken, zrcksc = zurückschicken, zrcksn = zurücksenden; anim = animate, innm = inanimate; coll = collective, indiv = individual, ninf = non inferrable; abstrc = abstract, conctr = concrete, prpstn = propositional.

CITs with good predictive qualities

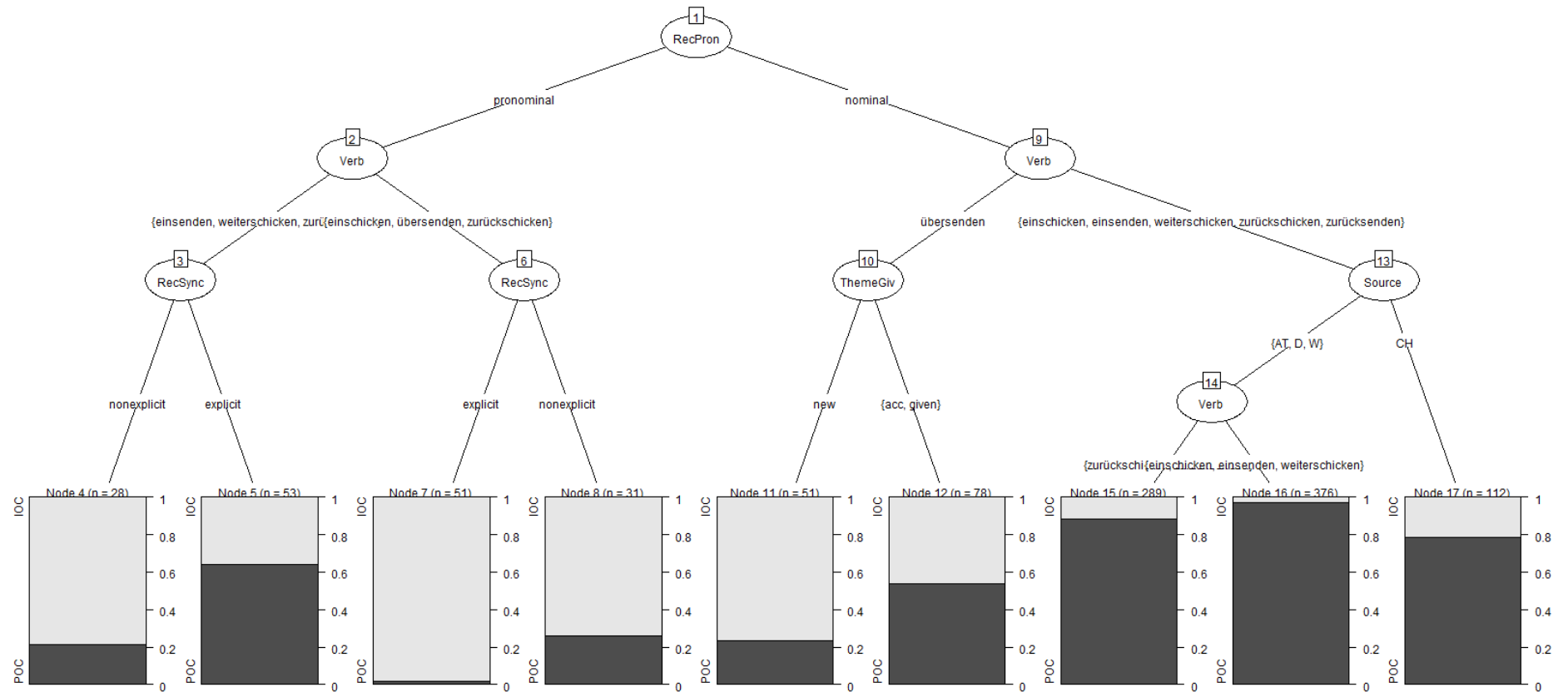


Figure 30 CIT for all the complex -schicken/senden verbs

Table 38 Confusion matrix. Correct within sample prediction rate = 86%.

Predicted	Observed	
	IOC	POC
IOC	134	27
POC	125	783

A CIT was also fitted to the complex *-schicken/senden* data. According to Table 38, the prediction rate is 86%. Figure 30 shows that POC is primarily associated with nominal RECIPIENTS that occur with a number of verbs. *Einschicken*, *einsenden*, *weeterschicken*, *zurückschicken* and *zurücksenden* tend to prefer POC (cf. Nodes 15, 16, 17). Moreover, POC is the preferred alternant when pronominal RECIPIENTS and the verbs *einsenden*, *weeterschicken* or *zurücksenden* are in combination with explicit RECIPIENTS (cf. Node 5). Conversely, IOC occurs in cases where pronominal RECIPIENTS are in combination with non-explicit RECIPIENTS with the verbs *einsenden*, *weeterschicken* or *zurücksenden* (Node 4). With the verbs *einschicken*, *übersenden* and *zurückschicken* IOC occurs with both explicit and non-explicit RECIPIENTS. With these verbs, explicit RECIPIENTS almost have an exclusive preference for IOC (compare Node 7 with Node 8). With nominal RECIPIENTS the verb *übersenden* deviates from the other verbs: it shows a clear preference for IOC with new THEMES, whereas given or accessible THEMES have no important influence on the alternation (cf. Node 12).

In sum, with regard to the complex *-schicken/senden* verbs the alternation tends to be strongly associated with Pronominality of RECIPIENT, but the verb also plays a role that should not be underestimated. CITs were therefore also fitted for each complex verb separately.

einschicken

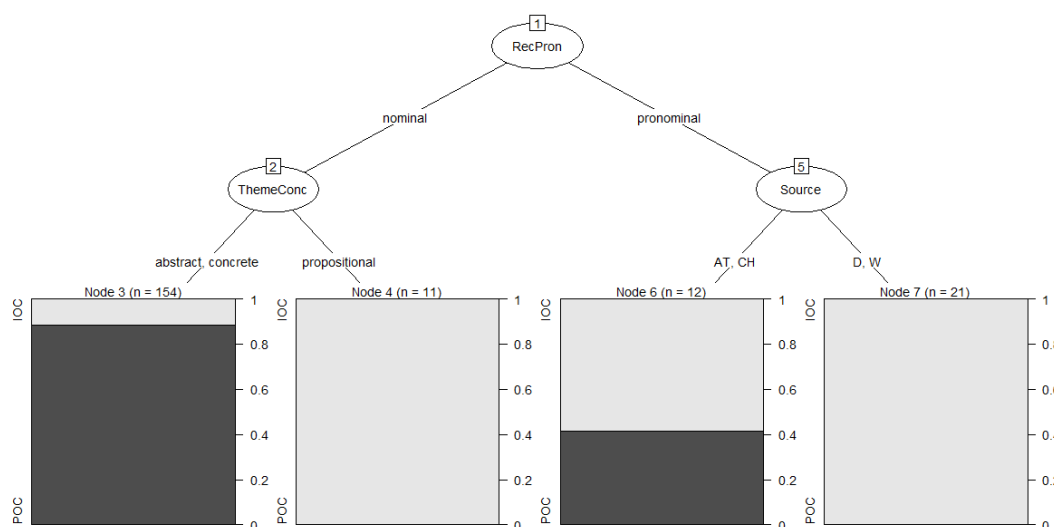


Figure 31 CIT for *einschicken*

Table 39 Confusion matrix. Correct within sample prediction rate = 88%.

Predicted	Observed	
	IOC	POC
IOC	39	5
POC	18	136

According to the confusion matrix in Table 39, the prediction rate is 88%. With regard to the verb *eingeschicken*, the main predictor for the alternation is Pronominality of RECIPIENT (cf. Figure 31). POC is the preferred alternant with nominal RECIPIENTS in combination with abstract or concrete THEMES (198) (Node 3). IOC is the outcome with pronominal RECIPIENTS (199) (Nodes 6 and 7) and when nominal RECIPIENTS are in combination with a propositional THEME (Node 4) (200):

- (198) *Davos hat [das Video mit der besagten Szene] nicht <an die Liga> eingeschickt.*
 ‘Davos has not sent the video with the said scene to the league.’
 (nominal RECIPIENT, concrete THEME – Node 3) UID 1260
- (199) *Renate Duke hat <uns> [dieses Foto aus Ober Kostenz] eingeschickt.*
 ‘Renate Duke sent us this photo from Ober Kostenz.’
 (pronominal RECIPIENT, German Source - Node 7) UID 1231
- (200) *Sie haben <dem Finanzamt> bereits die [Lohnzettel 97 ihrer Mitarbeiter] eingeschickt.*
 ‘They have already sent the payslips of 97 of their employees to the tax office.’
 (nominal RECIPIENT, propositional THEME - Node 4) UID 1222

einsenden

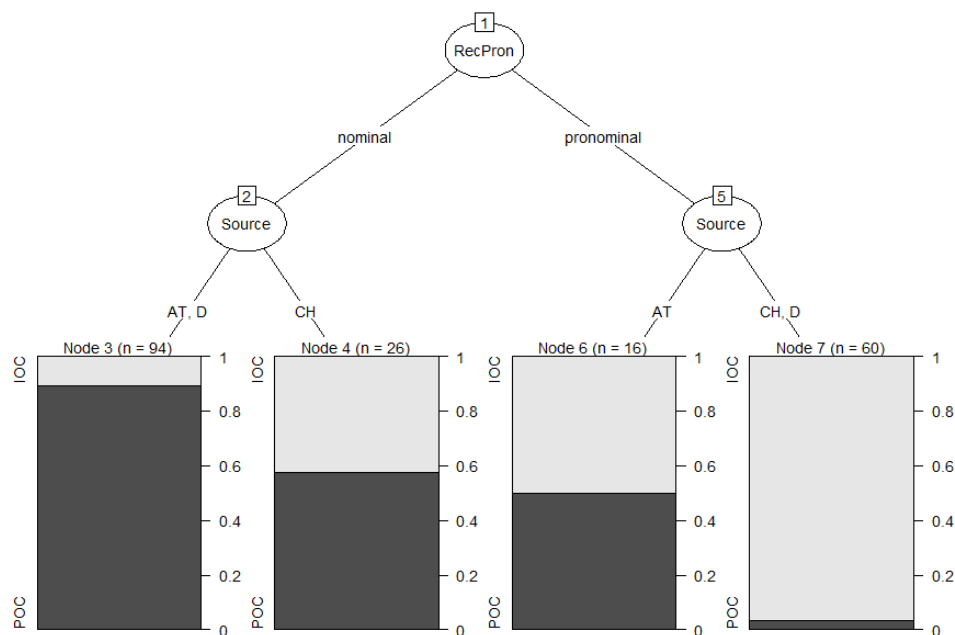


Figure 32 CIT for *einsenden*

Table 40 Confusion matrix. Correct within sample prediction rate = 84%.

Predicted	Observed	
	IOC	POC
IOC	66	10
POC	21	99

The sample prediction rate for IOC and POC with *einsenden* is 84% (cf. Table 40). *Einsenden* shows a similar picture as *einschicken*: the main predictor is Pronominality of RECIPIENT (cf. Figure 32). POC is mainly observed with nominal RECIPIENTS (201) (Nodes 3 and 4) whereas pronominal RECIPIENTS from Swiss or German sources are almost exclusively in IOC (202) (Node 7). Austrian texts seem to have no preference for either of the alternants when they have pronominal RECIPIENTS (Node 6).

(201) [Das fertige Video] muss bis zum 4. Mai <an die Stadtgemeinde Eisenerz> *eingesandt* werden.

‘The completed video must be sent in by May 4th to the municipality of Eisenerz.’

(nominal RECIPIENT, Austrian Source – Node 3) UID 2217

(202) Dieser Leser hat <uns> [einen Leserbrief aus dem Jahr 1917] *eingesandt*.

‘This reader has sent us a letter to the editor from the year 1917.’

(pronominal RECIPIENT, German Source – Node 7) UID 2280

zurückschicken

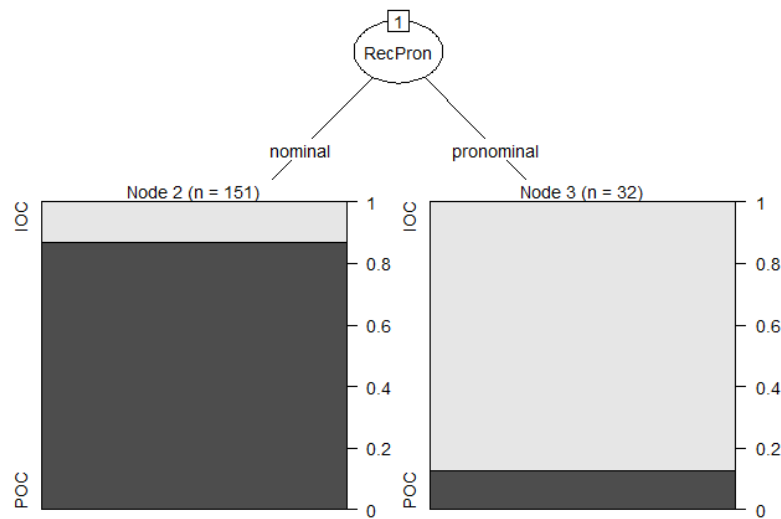


Figure 33 CIT for *zurückschicken*

Table 41 Confusion matrix. Correct within sample prediction rate = 87%.

Predicted	Observed	
	IOC	POC
IOC	28	4
POC	20	131

The confusion matrix in Table 41 indicates that the predictions are correct at a rate of 87%. As we have seen before with the complex *-schicken/senden* verbs, Pronominality of RECIPIENT is also the best predictor for the IOC/POC alternation with *zurückschicken* (cf. Figure 33). The CIT indicates that pronominal RECIPIENTS are in IOC (Node 3 (203)) whereas nominal RECIPIENTS are associated with POC (Node 2 (204)).

- (203) *Ich schicke <Ihnen> [das Gerät] sofort wieder zurück.*
'I will send the device back to you immediately.'
(pronominal RECIPIENT - Node 3) UID 1452
- (204) *Sie schickten [die Poster] <an Diddy> zurück.*
'They sent the posters back to Diddy.'
(nominal RECIPIENT - Node 2) UID 1440

zurücksenden

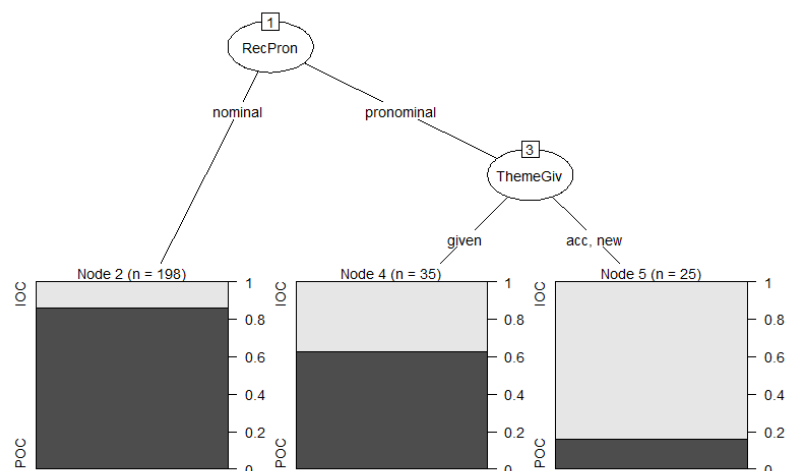


Figure 34 CIT for *zurücksenden*

Table 42 Confusion matrix. Correct within sample prediction rate = 82,5%.

Predicted	Observed	
	IOC	POC
IOC	21	4
POC	41	192

According to the confusion matrix, the predictions are 82,5% correct (cf. Table 42). Similar to the other complex *-senden* verbs, the IOC/POC alternation with *zurücksenden* is best predicted by the factor Pronominality of RECIPIENT (cf. Figure 34). In combination with given THEMES, the verb is more strongly associated with POC than with IOC (Node 4 (205)). With nominal RECIPIENTS, the association of *zurücksenden* is also with POC (Node 2 (206)). With pronominal RECIPIENTS, accessible and new THEMES are indications for IOC (Node 5 (207)).

- (205) *Erst die Hälfte der 14 Mannschaften haben [ihren Fragebogen] <an uns> zurückgesandt.*
 ‘Only half of the 14 teams have returned their questionnaires to us.’
 (pronominal RECIPIENT, given THEME - Node 4) UID 2042
- (206) *Insgesamt wurden [2088 Karten] <an den AWB> zurückgesandt.*
 ‘A total of 2088 cards were returned to the AWB.’
 (nominal RECIPIENT – Node 2) UID 2045
- (207) *Die Frau ersucht Dieb oder Finder, <ihr> wenigstens [Schlüssel und Papiere] zurückzusenden.*
 ‘The woman asks the thief or finder to at least return her keys and papers.’
 (pronominal RECIPIENT, new THEME – Node 5) UID 1970

CITs with poor predictive qualities
übersenden

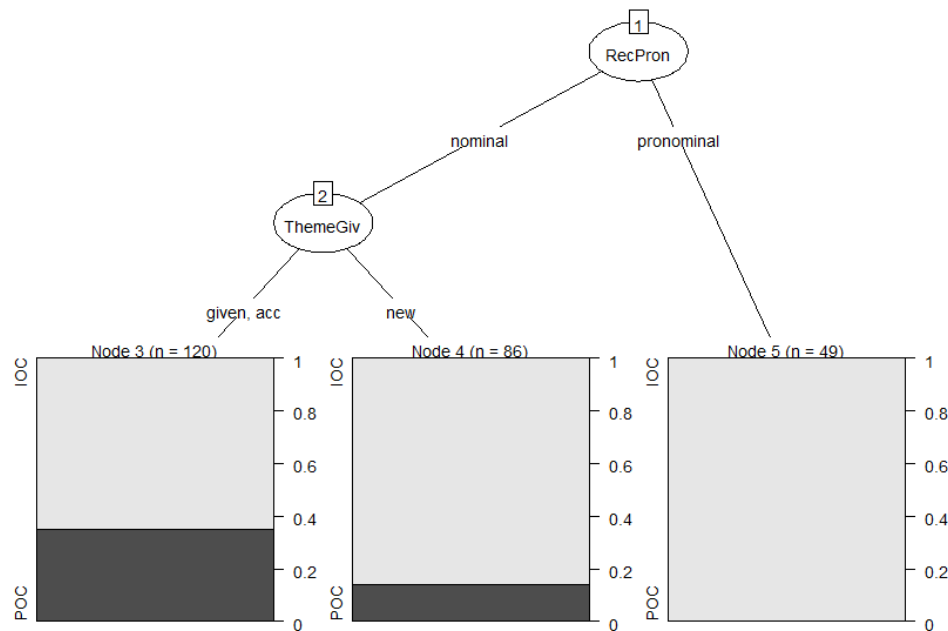


Figure 35 CIT for *übersenden*

Table 43 Confusion matrix. Correct within sample prediction rate = 79 %.

Predicted	Observed	
	IOC	POC
IOC	201	54
POC	0	0

The CIT for the verb *übersenden* has poor predictive qualities. The confusion matrix in Table 43 only predicts IOC. Yet, the tree in Figure 35 indicates that the factors Pronominality of RECIPIENT and Givenness of THEME are statistically significant. Thus, with a nominal RECIPIENT there is a statistically higher probability for POC than with a pronominal RECIPIENT, which always takes IOC, cf. Node 5 (208). However, with *übersenden*, also nominal RECIPIENTS are associated with IOC (Node 4) (209). The latter is an interesting tendency, but Pronominality of RECIPIENT does not add to the baseline prediction rate of a model that always predicts IOC for *übersenden*. Only with given and new THEMES there is a slightly stronger tendency towards POC (Node 3) (210), but this tendency is not predicted. The accuracy of the fitted model is the same as the baseline, that is: 78.8%.

- (208) Als Anhang übersende ich <Ihnen> [zwei Urlaubsfotos].
'As an attachment I am sending you two vacation photos.'
(pronominal RECIPIENT - Node 5) UID 1960

- (209) *Der Zeuge übersendet <der Staatsanwaltschaft> [eine eidesstattliche Erklärung].*
 ‘The witness sends an affidavit to the prosecutor.’
 (nominal RECIPIENT, new THEME – Node 4) UID 1910
- (210) *Hendrik Hering wird [die vorhandene Kostenermittlung] nun <an das Ministerium> übersenden.*
 ‘Hendrik Hering will now send the existing cost calculation to the ministry.’
 (nominal RECIPIENT, accessible THEME – Node 3) UID 1742

weeterschicken

Because of data scarcity in the *weeterschicken* dataset, some thresholds in the control options of the CIT algorithm were lowered to: minsplit = 15, minbucket = 5. The resulting tree is visualised in Figure 36.

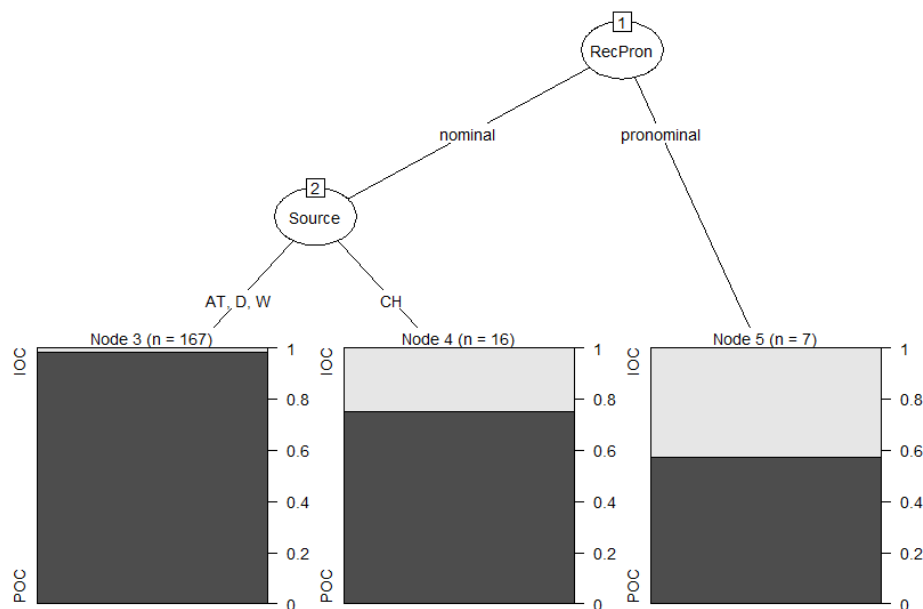


Figure 36 CIT for *weeterschicken*.

Table 44 Confusion matrix. Correct within sample prediction rate = 95%.

Predicted	Observed	
	IOC	POC
IOC	0	0
POC	10	180

The confusion matrix in Table 44 indicates a 95% percent correct prediction, but the model only predicts POC. Yet, the tree indicates that Pronominality of RECIPIENT and Source are statistically significant. Thus, with a nominal RECIPIENT and an Austrian,

German or Wikipedia source there is a statistically higher probability for POC, e.g., (211) than with a Swiss source or with a pronominal RECIPIENT, which more often takes IOC, cf. (212). The latter is an interesting tendency to observe, but Pronominality of RECIPIENT does not add to the baseline prediction rate of a model that always predicts POC for *weeterschicken*. The accuracy of the fitted model is the same as the baseline, that is: 94.7% (= 180/(10+180)). However, as in the other CITs, the tendency that pronominal RECIPIENTS are more strongly associated with IOC than with POC, is also visible here (cf. Node 5, which however is based on only 7 attestations).

- (211) *Drei 15-Jährige schickten [Handybilder von sich in Unterwäsche] <an Jungs> weiter.*
 ‘Three 15-year-olds sent cell-phone pictures of themselves in underwear to boys.’
 (German Source, nominal RECIPIENT – Node 3) UID 7335
- (212) *Ja, weil sie <mir> [den Brief] nicht im Originalumschlag weitergeschickt hatte.*
 ‘Yes, because she had not forwarded the letter to me in the original envelope.’
 (pronominal RECIPIENT – Node 5) UID 7362

5.3.4 Ausleihen, verleihen and verkaufen

5.3.4.1 Constituent order

Table 45 shows that with regard to IOC in the *ausleihen, verleihen, verkaufen* dataset, the T-R constituent order is less frequent than with certain other complex verbs described in the previous sections (e.g., *preisgeben, übergeben, zurückgeben, einschicken, übersenden* which each display a relatively high percentage of IOC(T-R) order). Whereas *verkaufen* is a typical POC verb with 75% POC attestations, *verleihen* strongly prefers IOC(R-T) (81%). The constituent order T-R adds 7% to the IOC attestations. *Ausleihen* has more balanced proportions between IOC and POC: in the dataset 47% of the attestations in IOC alternate with 53% POC(T-R). The IOC attestations have 38% R-T and 9% T-R constituent order.

Table 45 Bivariate frequencies and proportions (verb by Cx and constituent order) in the *ausleihen, verleihen, verkaufen* dataset

	IOC(R-T)	IOC(T-R)	POC(R-T)	POC(T-R)	total
<i>ausleihen</i>	65 (38%)	16 (9%)	0 (0%)	91 (53%)	172 (100%)
<i>verkaufen</i>	55 (15%)	32 (9%)	6 (2%)	283 (75%)	376 (100%)
<i>verleihen</i>	269 (81%)	22 (7%)	2 (1%)	38 (11%)	331 (100%)
TOTAL	389 (44%)	70 (8%)	8 (1%)	412 (47%)	879 (100%)

5.3.4.2 Statistical analysis

The model for this group of verbs is a penalised logistic regression model, with 12 significant factors (cf. Figure 37): (1) Verb, (2) Givenness of RECIPIENT, (3) Source, (4) Givenness of THEME, (5) Propernounhood of RECIPIENT, (6) Animacy of AGENT, (7) Syncretism of RECIPIENT, (8) Animacy of RECIPIENT, (9) Number of RECIPIENT, (10) Animacy of THEME, (11) Definiteness of RECIPIENT, (12) Person of RECIPIENT. The model⁷³ is presented in Table 46.

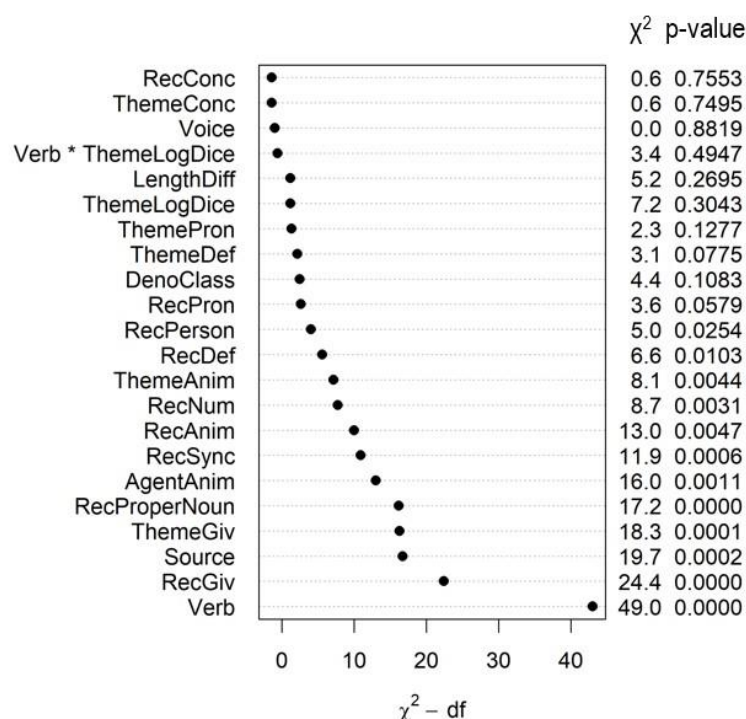


Figure 37 ANOVA for *ausleihen*, *verleihen*, *verkaufen*

Table 46 The *ausleihen*, *verleihen*, *verkaufen* model

Logistic Regression Model

```
lrm(formula = Cx ~ Verb * ThemeLogDice + Source + Voice + DenoClass +
    AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
    ThemeConc + ThemeLogDice + RecPron + RecGiv + RecAnim + RecDef +
    RecPerson + RecConc + RecSync + RecNum + RecProperNoun +
    rcs(LengthDiff), data = comp, x = TRUE, y = TRUE, penalty = p$penalty)
```

⁷³ With respect to the quality of the model, internal validation using bootstrap validation indicates an excellent predictive quality. Bias-corrected Somer's Dxy equals 0.94 (which is equal to a bootstrapped C-index of 0.97). Other validation indexes (see Appendix E) do not show signs of overoptimism, which suggests that overfitting is not problematic. We checked for possible collinearity by examining the VIFs (as reported by the `vif()` function in the `rms`-package). The VIFs suggest that there is some collinearity between the verb *verkaufen* and *verleihen* (VIFs 14 and 11) and the interaction between *verkaufen* and *ThemeLogDice* (15). However, this collinearity did not affect the interpretation of the effects observed in the model, see Appendix E for more model diagnostics.

Penalty factors

simple nonlinear interaction nonlinear.interaction
0.42 0.42 0.42 0.42

		Model Likelihood		Discrimination		Rank Discrim.	
		Ratio Test		Indexes		Indexes	
Obs	879	LR chi2	904.40	R2	0.848	C	0.980
IOC	459	d.f.	34.058	g	5.407	Dxy	0.961
POC	420	Pr(> chi2)	<0.0001	gr	222.928	gamma	0.961
max deriv	4e-09	Penalty	16.29	gp	0.476	tau-a	0.480
				Brier	0.053		

	Coef	S.E.	wald Z	Pr(> Z)	Penalty Scale
Intercept	2.5776	2.2849	1.13	0.2593	0.0000
Verb=verkaufen	2.2270	1.0625	2.10	0.0361	0.5292
Verb=verleihen	-1.1986	1.0362	-1.16	0.2474	0.5292
ThemeLogDice=low	-1.2815	1.0192	-1.26	0.2086	0.5292
ThemeLogDice=no	-0.8908	0.9801	-0.91	0.3634	0.5292
Source=CH	-2.8824	0.6495	-4.44	<0.0001	0.5612
Source=D	-1.4389	0.4775	-3.01	0.0026	0.5612
Source=W	-1.5526	1.1252	-1.38	0.1676	0.5612
Voice=passive	-0.1259	0.8475	-0.15	0.8819	0.4583
DenoClass=concrete	0.5531	0.7740	0.71	0.4748	0.5292
DenoClass=propositional	-1.6648	1.1787	-1.41	0.1578	0.5292
AgentAnim=indv	-1.2936	0.3735	-3.46	0.0005	0.5612
AgentAnim=innm	-1.9993	0.9726	-2.06	0.0398	0.5612
AgentAnim=ninf	0.3710	0.8699	0.43	0.6697	0.5612
ThemePron=pronominal	-0.6863	0.4505	-1.52	0.1277	0.4583
ThemeGiv=given	1.4635	0.4075	3.59	0.0003	0.5292
ThemeGiv=new	0.0124	0.4153	0.03	0.9762	0.5292
ThemeAnim=innm	-1.5455	0.5427	-2.85	0.0044	0.4583
ThemeDef=indefinite	-0.6167	0.3493	-1.77	0.0775	0.4583
ThemeConc=concrete	0.5606	0.7724	0.73	0.4680	0.5292
ThemeConc=propositional	0.6729	1.1854	0.57	0.5703	0.5292
RecPron=pronominal	-0.9721	0.5125	-1.90	0.0579	0.4583
RecGiv=given	0.4282	0.5443	0.79	0.4315	0.5292
RecGiv=new	1.9566	0.4910	3.99	<0.0001	0.5292
RecAnim=indv	-0.8805	0.4559	-1.93	0.0534	0.5612
RecAnim=innm	-1.8243	0.9338	-1.95	0.0507	0.5612
RecAnim=undr	0.6059	0.5500	1.10	0.2706	0.5612
RecDef=indefinite	1.0536	0.4104	2.57	0.0103	0.4583
RecPerson=nonlocal	-1.2890	0.5768	-2.23	0.0254	0.4583
RecConc=concrete	1.1152	1.6376	0.68	0.4959	0.5292
RecConc=propositional	0.1567	1.8991	0.08	0.9343	0.5292
RecSync=nonexplicit	-3.6344	1.0526	-3.45	0.0006	0.4583
RecNum=singular	-1.0282	0.3480	-2.95	0.0031	0.4583
RecProperNoun=propernoun	1.7883	0.4316	4.14	<0.0001	0.4583
LengthDiff	0.1121	0.0899	1.25	0.2122	2.3938
LengthDiff'	-0.2097	0.2705	-0.78	0.4382	2.3475
LengthDiff''	0.2973	1.8483	0.16	0.8722	0.4248
LengthDiff'''	1.9343	3.9560	0.49	0.6249	0.1749
Verb=verkaufen * ThemeLogDice=low	0.3040	1.1971	0.25	0.7995	0.1685
Verb=verleihen * ThemeLogDice=low	1.0204	1.2733	0.80	0.4229	0.1660
Verb=verkaufen * ThemeLogDice=no	-0.6474	1.1023	-0.59	0.5570	0.2834
Verb=verleihen * ThemeLogDice=no	0.6626	1.1158	0.59	0.5526	0.2265

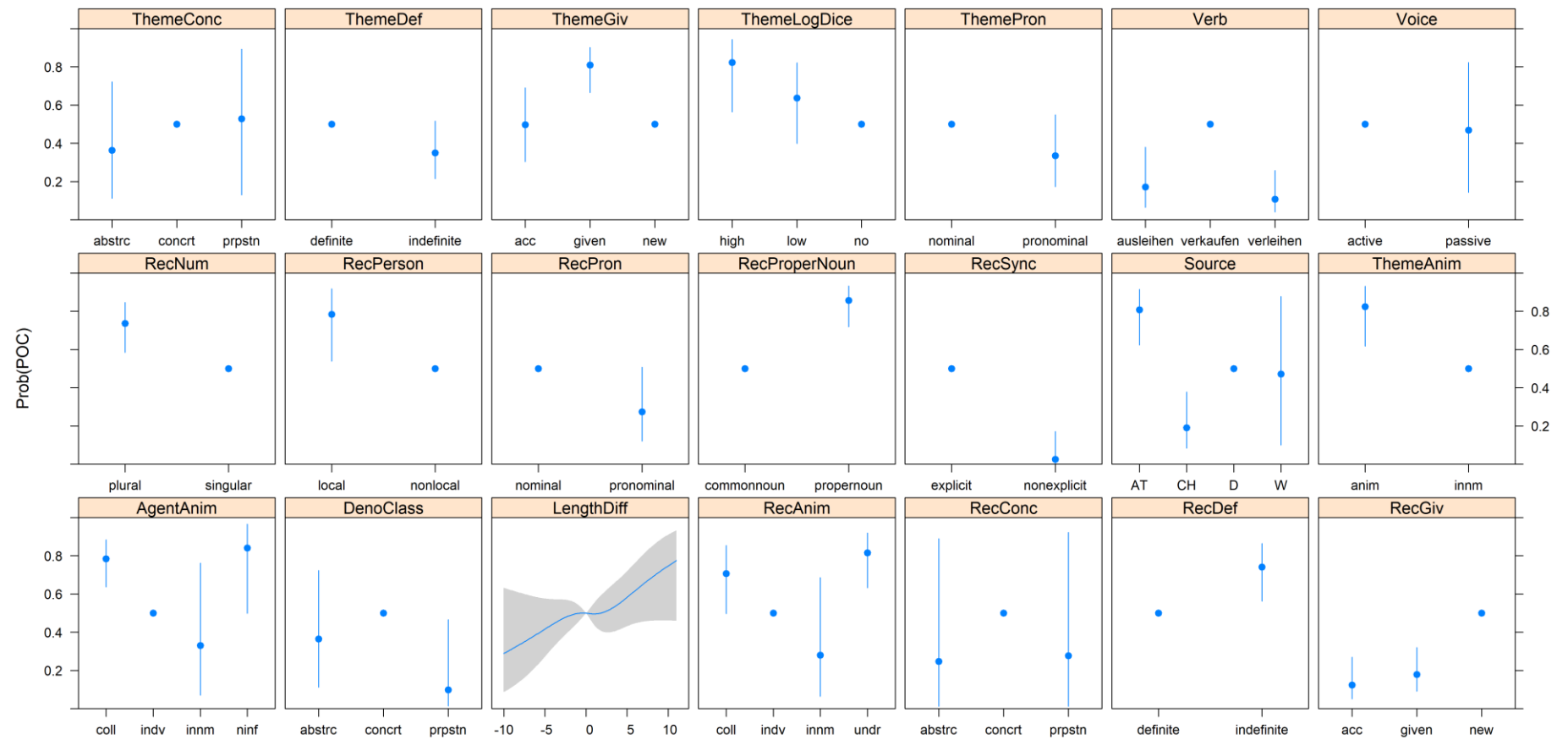


Figure 38 Effect plots for *ausleihen*, *verleihen* and *verkaufen*⁷⁴

⁷⁴ Clarification of the abbreviations: abstrc = abstract, concrct = concrete, prpstn = propositional; acc = accessible; anim = animate, innm = inanimate; coll = collective, indiv = individual, ninf = non inferrable; undr = underspecified.

As expected on the basis of the previous analyses, the factors Verb and Source are significant. The verbs *ausleihen* and *verleihen* tend towards IOC, whereas *verkaufen* is comparatively more a POC verb. Swiss texts are associated with IOC, whereas Austrian texts tend to be associated with POC. Furthermore, in this dataset, 7 of the 12 significant factors concern the RECIPIENT: Givenness, Propernounhood, Syncretism, Animacy, Number, Definiteness and Person of RECIPIENT are all significant. Givenness and Animacy of THEME are also significant and so is Animacy of AGENT.

IOC is associated with given and accessible RECIPIENTS that are common nouns and non-explicit, individual or inanimate (notice the large CI), definite, singular and nonlocal.⁷⁵ Regarding the THEME, an association was found between IOC and accessible or new THEMES that are inanimate. Individual and inanimate AGENTS (the latter however with a large CI) are also associated with IOC.

Conversely, POC is associated with new RECIPIENTS that are proper nouns and explicit, collective or underspecified, indefinite, plural and local. POC is also associated with given and animate THEMES, collective or non inferrable AGENTS.

Below are some typical examples, (213) through (215), with their predicted probabilities.

- (213) *Er verleiht <Erscheinungen, die uns verborgen sind>, [ein Bild].*
 he.NOM give.PRS phenomena.DAT that are hidden to us an.ACC image
 ‘He (a photographer) gives an image of phenomena that are hidden to us.’
 (Verb *verleihen*, Swiss Source, individual AGENT, new THEME, new, inanimate, non-explicit RECIPIENT which is a common noun; predicted probability = 100% IOC) UID 1118
- (214) *So wurde [er] 1994 für sechs Monate <an die Vereinten Nationen>*
 so be.PASS.IPFV.3SG he.NOM in 1994 for six months to the.ACC United Nations
ausgeliehen, <<die ihn in den Irak schickten>>.
 loan.PTCP who sent him to Iraq
 ‘So, in 1994 he was loaned to the United Nations for six months, who sent him to Iraq.’
 (non inferrable AGENT, given and animate THEME, new, collective, plural RECIPIENT which is a proper noun; predicted probability = 100% POC) UID 796
- (215) *Sie verkauften [die 17-Jährige] zur Zwangsheirat <an einen Mann>.*
 they.NOM sell.IPFV.3PL the.ACC 17-year-old for forced marriage to a.ACC man
 They sold the 17-year-old to a man for forced marriage.’
 (Verb *verkaufen*, German Source, given, animate THEME, new, indefinite RECIPIENT; predicted probability = 98% POC) UID 403

⁷⁵ This finding contradicts Bresnan and Nikitina’s (2003) finding (cf. Section 5.1.3 on *geben*) that the distribution of local (1st and 2nd) persons is associated with dative NPs. This might be due to the fact that their study concerns spoken language only, where 1st and 2nd person pronouns occur more often.

The CIT for the three complex verbs together (cf. Figure 39) is complicated and quite difficult to describe, although the confusion matrix in Table 47 indicates a prediction rate of 90%.

Table 47 Confusion matrix. Correct within sample prediction rate = 90%.

Predicted	Observed	
	IOC	POC
IOC	403	31
POC	56	389

At first glance, one can see that certain combinations of factors are clearly associated with IOC (cf. Nodes 6, 8, 12, 13, 14 and 25) and others with POC (cf. Nodes 9, 18, 19, 21, 22 and 24). In order not to complicate the description, I resort to the description of the trees for each verb apart.

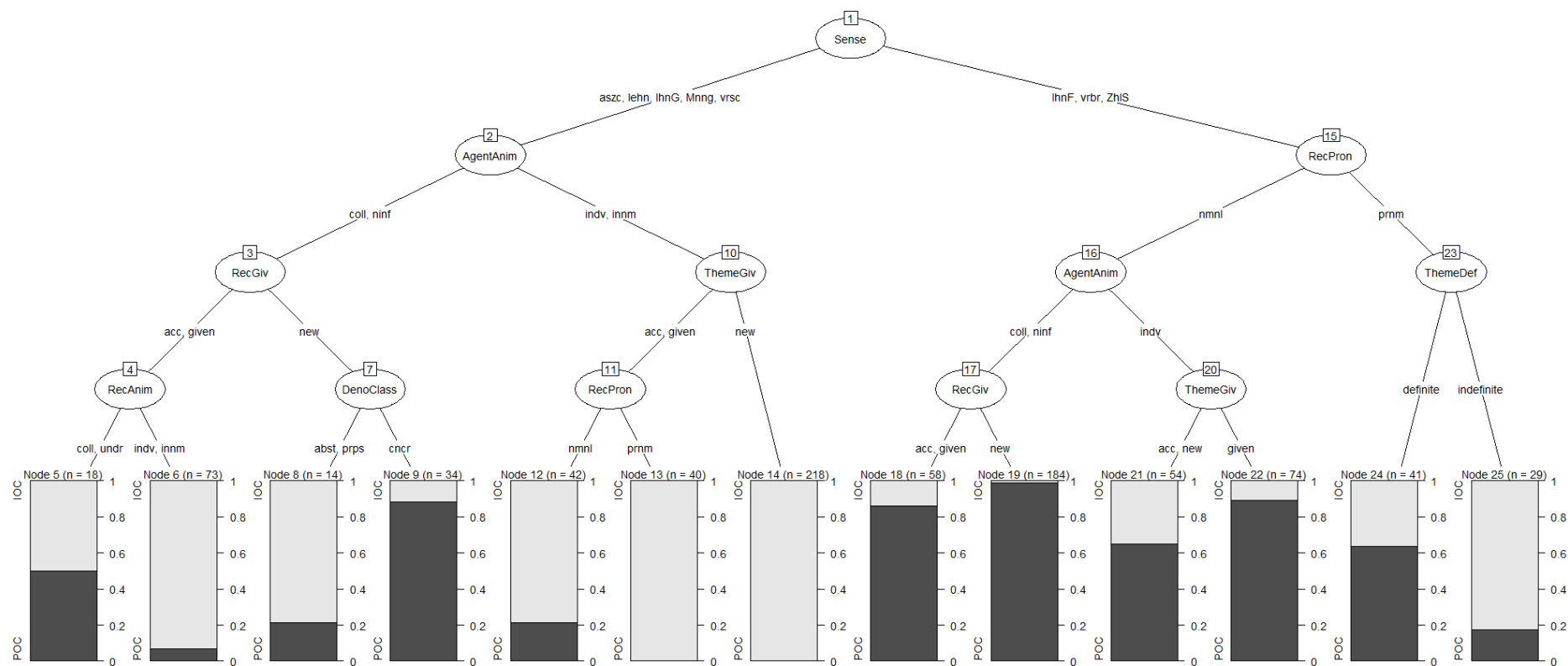


Figure 39 CIT for *ausleihen*, *verleihen*, *verkaufen*⁷⁶

⁷⁶ Clarification of the abbreviations used in the CIT: aszc = auszeichnen, lehn = leihen, lhnG = leihen Geld, Mnng = Meinung, vrsc = verschaffen, lhnF = leihen Fußball, vrbr = verborgen, zhls = Zahlung Summe.

ausleihen

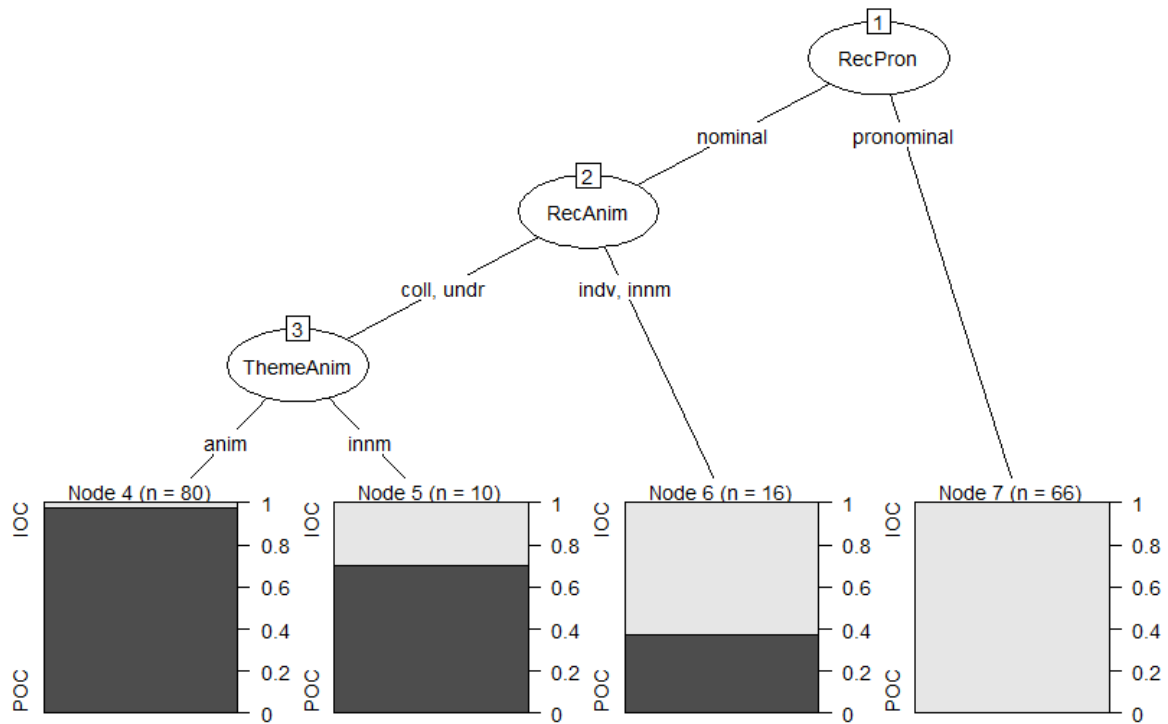


Figure 40 CIT for *ausleihen*⁷⁷

Table 48 Confusion matrix. Correct within sample prediction rate = 94%.

Predicted	Observed	
	IOC	POC
IOC	76	6
POC	5	85

The prediction rate for the IOC/POC alternation with the verb *ausleihen* is 94% (cf. Table 48). The best predictor is Pronominality of RECIPIENT: pronominal RECIPIENTS are always associated with IOC (Node 7 (216)), (cf. Figure 40). POC is the preferred alternant with nominal RECIPIENTS, however, when the RECIPIENT is individual or inanimate, there is more chance of IOC than of POC (Node 6 (217)). Collective or underspecified RECIPIENTS are almost exclusively associated with POC (Nodes 4 (218) and 5 (219)).

⁷⁷ Clarification of the abbreviations used in the CIT: coll = collective, undr = underspecified, indv = individual, innm = inanimate, anim = animate.

- (216) *Ich leihe [ihn] <Dir> selbstverständlich aus, wann immer Du möchtest! (ihn = a poncho)*
 ‘I will of course lend it to you whenever you want!’
 (pronominal RECIPIENT – Node 7) UID 580
- (217) *[Die Schafe] hat er <einer Letzinerin> ausgeliehen, sie sollen auf deren Hof den Rasenmäher ersetzen.*
 ‘He has loaned the sheep to a Letzine woman, to replace the lawn mower in her yard.’
 (nominal, individual RECIPIENT – Node 6) UID 812
- (218) *Der SV Waldhof leiht [seinen Torjäger Johnny Akpoborie] <an Erstligist Hansa Rostock> aus.*
 ‘SV Waldorf is loaning its top scorer Johnny Akpoborie to first division club Hansa Rostock.’
 (nominal, underspecified RECIPIENT, animate THEME – Node 4) UID 734
- (219) *Die katholische Kirche leiht [das Kunstwerk] <an die Michaeliskirche> aus.*
 ‘The Catholic Church lends the artwork to the Saint Michael’s church.’
 (nominal, underspecified RECIPIENT, inanimate THEME – Node 5) UID 683

verleihen

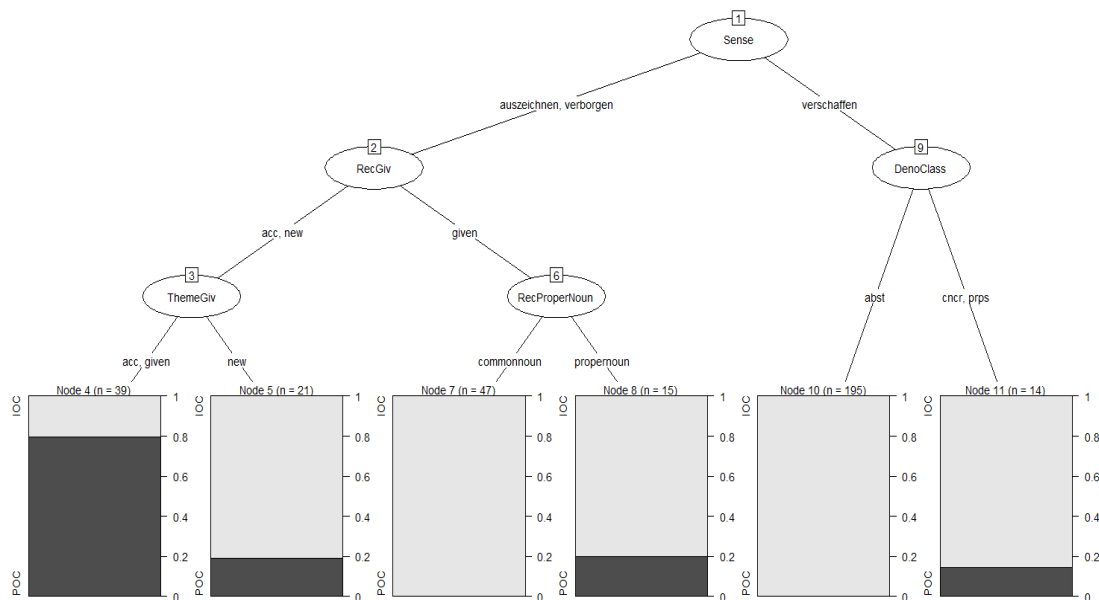


Figure 41 CIT for verleihen⁷⁸

⁷⁸ Clarification of the abbreviations in the CIT: acc = accessible, abst = abstract, cnrc = concrete, prps = propositional

Table 49 Confusion matrix. Correct within sample prediction rate = 95%.

Predicted	Observed	
	IOC	POC
IOC	283	9
POC	8	31

The CIT for the verb *verleihen* shows more splitting points than for the other complex verbs. The main predictor is Sense. The prediction rate is 95% (cf. Table 49). Concerning the IOC/POC alternation, there is a difference between the sense “verschaffen” on the one hand and the Senses “auszeichnen” and “verborgen” on the other (cf. Figure 41). For the sense “verschaffen” IOC is the preferred alternant, especially with NPs that fall under the abstract denotational class (Node 4 (220)), but also with the concrete and prepositional denotational classes (Node 11). For the other senses “auszeichnen” and “verborgen”, IOC is also preferred with given RECIPIENTS (Nodes 7 and 8 (221)) and POC is associated with the accessible or new RECIPIENTS and accessible or given THEMES (Node 4 (222)). However, with new THEMES IOC is the preferred alternant (Node 5).

(220) *Und er verleiht <dem Verfahren> [einen Mehrwert].*

‘And it gives the process added value.’

(Sense “verschaffen”, abstract Denotational Class - Node 10) UID 859

(221) *Der KGB hat <ihr> [die höchsten sowjetischen Orden] verliehen.*

‘The KGB has awarded her the highest Soviet medals.’

(Sense “auszeichnen”, given RECIPIENT, common noun – Node 7) UID 1088

(222) *[Die Kulturehrendenadel] wird seit 2007 jährlich <an höchstens drei Personen> verliehen.*

‘The Badge of Honor for Culture has been awarded annually since 2007 to a maximum of three people.’

(Sense “auszeichnen”, new RECIPIENT, given THEME – Node 4) UID 1075

verkaufen

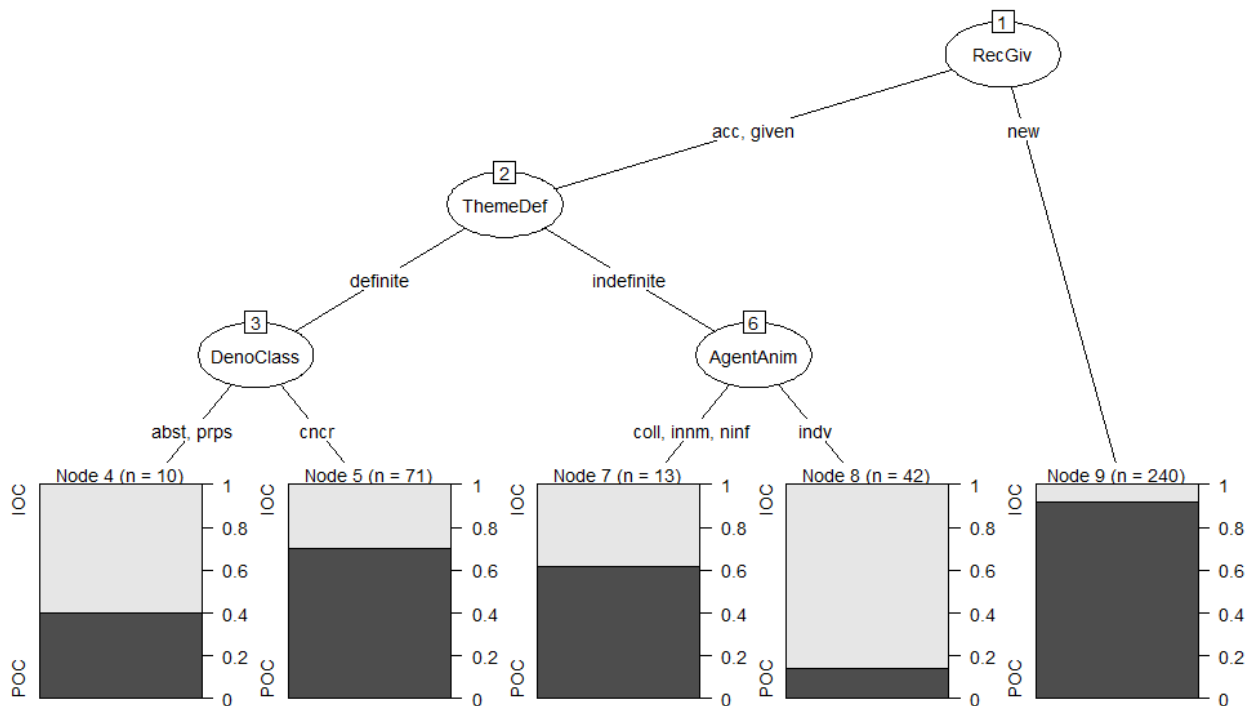


Figure 42 CIT for *verkaufen*⁷⁹

Table 50 Confusion matrix. Correct within sample prediction rate = 85%.

Predicted	Observed	
	IOC	POC
IOC	42	10
POC	45	279

The confusion matrix for *verkaufen* in Table 50 shows a prediction rate of 85%. The CIT for *verkaufen* has 5 nodes to describe. Nodes 4 and 8 are clearly associated with IOC, whereas Nodes 5, 7 and 9 show more POC. I briefly discuss the results in turn.

In Node 4 (cf. Figure 42) accessible or given RECIPIENTS, definite THEMES and abstract or propositional denotational class are associated with IOC, cf. (223), although for this node there are only few attestations. Node 8 shows more accessible or given RECIPIENTS appearing in IOC (224), in this case with indefinite THEMES and an individual AGENT.

⁷⁹ Clarification of the abbreviations in the CIT: acc = accessible, abst = abstract, prps = propositional, cncr = concrete, coll = collective, innm = inanimate, ninf = non inferrable, indv = individual.

- (223) *Er hat <Ihnen> [seine Version der Geschichte] verkauft.*
 ‘He sold his version of the story to you.’
 (accessible RECIPIENT, definite THEME, propositional Denotational Class – Node 4) UID 23
- (224) *Der Betrüger verkaufte <den Illegalen> [Ausweise, "mit denen sie nach Österreich dürften"].*
 ‘The fraudster sold ID cards to the illegals, “with which they could go to Austria”.’
 (given RECIPIENT, indefinite THEME, individual AGENT – Node 8) UID 277

Accessible or given RECIPIENTS in combination with definite THEMES and concrete denotational class (Node 5) preferably appear in POC (225). When the THEME is indefinite and the AGENT collective, inanimate or non inferrable, POC is also the preferred alternant (Node 7). The bulk of the attestations with *verkaufen* is found in POC with new RECIPIENTS (node 9) (227).

- (225) *"Sie haben [mich] <an ihn> verkauft - wie ein Auto", erklärt Hjertström.*
 “‘They sold me to him like a car,” explains Hjertström.’
 (given RECIPIENT, definite THEME, concrete Denotational Class – Node 5) UID 543
- (226) *Vor 150 Jahren wurde [ein Teil Süddeuschlands] <an Preußen> verkauft.*
 ‘150 years ago, a part of Southern Germany was sold to Prussia.’
 (given RECIPIENT, indefinite THEME, non inferrable AGENT – Node 7) UID 464
- (227) *Bevor der nicht existiert, darf Monsanto [keinen Gen-Mais] <an Landwirte> mehr verkaufen.*
 ‘Monsanto may no longer sell GM maize to farmers before it (= the plan) exists.’
 (new RECIPIENT – Node 9) UID 494

Chapter 6 Discussion

This chapter is divided into three sections, relating to the three research questions that were defined in the Introduction.

The first section answers the research question regarding the morphosyntactic, semantic, pragmatic and information-structural factors that are associated with the two alternants IOC and POC. In this section, the findings of the case studies are summarised and the significant factors are discussed.

In the second section of this chapter, the research question concerning the scope (occurrence and extent) of the IOC/POC alternation with the verbs under study is addressed. In addition, the significant factor Verb is discussed and the claims of the Verb Sensitive Approach about the core meaning of transfer verbs displaying the alternation are examined. An alternative approach adopting underspecified verb meanings is proposed.

The third section addresses the third research question and considers a number of implications for the theory of alternating argument structures from the perspective of a layered approach to meaning. It is shown that an account of IOC and POC as allostructions of an overarching encoded constructeme is able to accommodate the German findings in a more coherent way than when IOC and POC are considered as two different constructions in their own right. It is also argued that, although the ditransitive alternation has been studied extensively in English, which in turn led to important findings that are partly cross-linguistically valid, the German alternation should be studied in its own, language-specific, terms.

Finally, a fourth section considers some of the limitations of the present study and concludes with a number of recommendations for further research.

6.1 Motivating factors

This section will focus on the significant factors that have been shown to be associated with the realisation of IOC or POC. Whenever relevant, I will link the discussion to findings and claims from previous research.

The case studies in Chapter 5 presented a Probabilistic Approach (PA) to alternations with the aim to estimate the simultaneous effect of a wide array of morphosyntactic, semantic, pragmatic and information-structural factors. In this study, multifactorial corpus analyses were applied as a tool to determine the statistically significant factors that have a bearing on the IOC/POC alternation. The findings can be interpreted in terms of “preferences” that speakers are assumed to have with regard to either of the alternants. PA is couched in a single-layered approach to language and does not distinguish between *meaning* and *sense* (i.e., semantics and pragmatics) in the way I do. Nevertheless, predictions arrived at in the framework of PA are compatible with a Three-Layer Approach to linguistic content. In particular, speaker’s preferences can be assumed to inform, in the Three-Layer Approach, the intermediary level of ‘normal language use’ (cf. Chapter 3 and Section 6.3). Thus, the significant factors and predictions about the probability that a specific alternant is realised are not simply to be situated within pragmatics but in that part of pragmatics that I have identified as being to a considerable extent conventionalised or even default.

Much probabilistic research has been done into the English ‘dative alternation’, and it is tempting to seek for the same explanatory factors in both languages and claim that the same processes are at work. For a comparison of the findings for the verb *geben* with the findings for the English DOC/POC alternation with *give*, I refer to De Vaere et al. (2018). There it is shown that the English ‘dative alternation’ and the German ditransitive alternation differ regarding typological features such as the alignment patterns of the alternants and constituent order. Based on these differences, I decided to focus on the ditransitive alternation in German as much as possible in its own terms (cf. Chapter 2).

Generally speaking, the significant factors regarding the realisation of IOC or POC in German can be ordered into two groups. The first group consists of factors related to THEME and RECIPIENT/ADDRESSEE⁸⁰ that show a tendency towards Harmonic Alignment of the arguments, the second group encompasses all the other significant factors. Firstly, the importance of the tendency towards **Harmonic Alignment** (cf. Section 1.2.5), which is especially observed in languages in which each alternant is strongly associated with a default constituent order, might need to be downplayed with regard to German. With

⁸⁰ In this section on the motivating factors I will refrain, for practical reasons, from specifically using the term ADDRESSEE as referring to the third argument with *schicken/senden* (cf. Section 6.2.2) and I will use RECIPIENT to designate any instantiation of the third argument in general.

respect to the first group of factors, it might be expected that in a language with variable constituent order, HA is not only more difficult to assess, but also of lesser importance. However, the finding that pronominal, individual (= animate), short, given, RECIPIENTS and nominal, new, longer, THEMES are associated with IOC points towards HA, especially if IOC is found with the R-T constituent order. Most of the factors suggesting HA are found to be significant in nearly all the datasets (cf. Table 51) and point in the expected direction of HA, except for Person of RECIPIENT, that associates nonlocal persons with IOC, whereas Bresnan and Nikitina (2003) find that the distribution of local persons is associated with dative NPs. Naturally, the HA effects for POC should point in the opposite direction: e.g., in POC (T-R), THEMES need to be given, according to the “given before new” principle, whereas the THEMES in IOC (R-T) are usually new. Table 51 provides an overview of the motivating factors in the five datasets. The numbers represent the order of importance of each factor in the logistic regression model. Numbers between brackets represent unexpected or opposite effects. In the last column the number of datasets in which the factor is significant is indicated. Additionally, Table 52 and Table 53 show the different splitting points (in order of effect strength) in the CITs for *schicken*, *senden* and the complex verbs. In the following paragraphs, I will only discuss the motivating factors as they appear in Table 51. The discussion of the CIT-related factors in Tables 52 and 53 would be too complicated, because sometimes a significant factor that turns up in the CIT may overrule a factor with a lower effect strength, or certain factors may appear several times on different levels in the CIT.

Table 51 shows that the complex *-geben* verbs are the only verb group where animacy of a constituent is not significant, and that RECIPIENT **animacy** plays a statistically significant role in the alternation with *geben*, *schicken/senden*, complex *-schicken/senden* verbs and *ausleihen*, *verleihen*, and *verkaufen*. With regard to the latter verbs the animacy of all three constituents is statistically significant and for *geben* also animacy of AGENT. The finding that POC is associated with collective and underspecified RECIPIENTS is made possible because RECIPIENT animacy was not operationalised as a binary factor (as, e.g., in cf. Bresnan and Nikitina (2003: 27); Bresnan et al. (2007: 77-78); Rappaport-Hovav and Levin (2008: 157); Bresnan and Ford (2010: 175)), but as a factor with four levels. This more fine-grained analysis enables me to observe the distinction between individuals, collectives and inanimates and there is room for referents that can be interpreted in multiple ways (i.e., due to their semantic underspecification). In two datasets (*geben* and *ausleihen*, *verleihen*, *verkaufen*) the factor Animacy of AGENT associates individual or inanimate AGENTS with IOC, whereas collectivity is associated with POC.

Table 51 Motivating factors in the five datasets according to the logistic regression analyses

Factor	Dataset	<i>geben</i>	<i>schicken/ senden</i>	<i>complex -geben</i>	<i>complex -senden</i>	<i>-schicken/ verkaufen</i>	<i>ausleihen, verleihen,</i>	number of datasets
Verb		not applicable	3	2	1	1		4
factors pertaining to Harmonic Alignment								
Animacy of RECIPIENT	1		1		5	8		4
Givenness of RECIPIENT	2		5	6		2		4
Pronominality of RECIPIENT	10		2	4	2			4
Givenness of THEME	5			3		4		3
Pronominality of THEME	12			5				2
Length difference	4		4					2
Definiteness of RECIPIENT						11		1
Person of RECIPIENT	9					(12)		2
Animacy of THEME						10		1
factors pertaining to transparency								
Propernounhood of RECIPIENT	(13)		9	7	6	5		5
Syncretism of RECIPIENT			8		(4)	(7)		3
factors pertaining to the intermediary level of ‘normal language use’								
Denotational Class		6						1
Sense			7					1
other factors								
Source		8		1	3	3		4
Voice		11	6					2
Animacy of AGENT		7				6		2
Number of RECIPIENT					7	9		2
Concreteness of THEME		3						1

Table 52 Splitting points in the CITs for *schicken*, *senden*, the *-geben* complex and the *-schicken/senden* complex verbs

Factor	CIT	sc ⁸¹	sn	abg	prsg	übg	zrckg	wtrg	sscomplex	ensc	ensn	zrcksc	zrcksn	übrs	wtr
Verb									2, 4						
									factors pertaining to Harmonic Alignment						
Animacy of RECIPIENT		2	2				2								
Givenness of RECIPIENT		4													
Pronominality of RECIPIENT		1	1				4		1	1	1	1	1	1	1
Givenness of THEME			3						3				2	2	
Length difference		3													
Definiteness of RECIPIENT		3													
Animacy of THEME		2, 3													
Definiteness of THEME			4												
									factors pertaining to transparency						
Propernounhood of RECIPIENT						1									
Syncretism of RECIPIENT									3						
									factors pertaining to the intermediary level of 'normal language use'						
Denotational Class							1								
Sense		4		1	1	2									
									other factors						
Source			3				3	1	3	2	2				2
Animacy of AGENT			2			2									
Number of RECIPIENT				2											
Concreteness of THEME										2					

⁸¹ Clarification of the abbreviations: *sc* = *schicken*, *sn* = *senden*; *abg* = *abgeben*, *prsg* = *preisgeben*, *übg* = *übergeben*, *zrckg* = *zurückgeben*, *wtrg* = *weitergeben*; *sscomplex* = *-schicken/senden* complex, *ensc* = *einschicken*, *ensn* = *einsenden*, *zrcksc* = *zurückschicken*, *zrcksn* = *zurücksenden*, *übrs* = *übersenden*, *wtr* = *weeterschicken*

Table 53 Splitting points in the CITs for *ausleihen*, *verleihen* and *verkaufen*

CIT	<i>ausleihen, verleihen, verkaufen</i>	<i>ausleihen</i>	<i>verleihen</i>	<i>verkaufen</i>
Factor				
Animacy of RECIPIENT	4	2		
Givenness of RECIPIENT	3, 4		2	1
Pronominality of RECIPIENT	2, 4	1		
Givenness of THEME	3, 4		3	
Animacy of THEME		3		
Definiteness of THEME	3			2
factors pertaining to transparency				
Propernounhood of RECIPIENT			3	
factors pertaining to the intermediary level of ‘normal language use’				
Denotational Class	4		2	3
Sense	1		1	
other factors				
Animacy of AGENT	2, 3			3

The finding that collectivity is associated with POC is in line with Wegener (1985: 245), who observes that POC is particularly used “if it is not about private, interpersonal events but about business events”, e.g., *Er vergibt einen Auftrag an die Firma; die Firma X verkauft Waren an die Firma Y* ‘He places orders with the company; company X sells goods to company Y’; cf. also Welke (1989: 19), who even associates the phenomenon with a diachronic transition in German from a case language to a language with increasingly frequent prepositional marking (cf. also Matzel 1976). Wegener characterises IOC and POC as constructions that have already been used in German “since ages” for the description of transactions (“Besitzwechsel”) and the description of transport (“Ortswechsel”) respectively. According to Wegener’s analysis, certain verbs are increasingly used in constructions that do not strictly speaking match their semantic content. She calls this use “zweckentfremdend” ‘alienating’, because the lexemes (including *verkaufen*, *vermieten*, *vererben*, etc.) do not denote a transport, but a transaction. The use of POC to denote business events (usually with collective AGENTS and/or RECIPIENTS) is to be explained with this view in mind, cf. example (228), provided by Starke (1970b: 246):

- (228) “Aber es wird schwierig sein, da die Russen [ihre Lizenzen] im allgemeinen nur <an Organisationen> geben.” (G. De Bruyn, *Hohlweg* 352)

‘But it will be difficult since the Russians generally only give their licenses to organizations.’

Starke (1970b: 246) observes that when the noun is an institution, the PP is to be conceived of as a directional phrase, whereas Matzel (1976: 178) only exemplifies

directionality with the preposition *in* (*eine Nachricht in die Zentrale senden* ‘send a message to the head office’). Nevertheless, I do not analyse these *an*-POC cases as belonging to a construction with a Caused Motion meaning, as Wegener’s and Starke’s analysis might suggest, but rather interpret the *an*-phrase as a variant of the dative in line with Malchukov et al. (2010), cf. Section 2.4.

In the *geben* dataset and in the *ausleihen*, *verleihen*, *verkaufen* dataset, sometimes inanimate RECIPIENTS are also associated with IOC. These uses especially occur with the verbs *geben* and *verleihen* when they denote abstract or propositional transfer, e.g., (229) through (231). However, this effect does not contradict the principle of HA, as most of the other HA features (e.g., definite before indefinite, given before new, short before long (the latter not always) are fulfilled.

(229) *Das Flutlicht wird dabei <der Veranstaltung> [eine besondere Atmosphäre] verleihen.*

‘The floodlights will lend the event a special atmosphere.’ UID 1106

(230) *Biller könne <dem Buch> noch [eine andere Fassung] geben.*

‘Biller could also give the book another setting.’ UID 3896

(231) *Telfes soll <dem Berglaufsport> [einen großen Schub] geben.*

‘Telfes is said to give mountain running a big boost.’ UID 3961

In the complex *-geben* dataset, apart from **pronominal** RECIPIENTS, pronominal THEMES are also associated with IOC. In Section 5.3.2.2 it was explained that this effect is not necessarily contradictory to HA, because of the syntactic flexibility of the German language that allows for alternative constituent orders in IOC. Moreover, in (232) and (233) it is clear that the short before long and the pronominal before nominal principles take the upper hand.

(232) *Die Feuerwehren bargen das Auto und übergaben [es] <dem Abschleppdienst>.*

‘The fire departments recovered the car and handed it over to the towing service.’ UID 2306

(233) *Er müsste die Sache melden [...]. Er müsste [sie] <den römischen Richtern> preisgeben.*

‘He would have to report the matter [...]. He would have to reveal it to the Roman judges.’ UID 3135

It should be noted that pronominal THEMES also occur in IOC (R-T) constituent order, in which case the animate before inanimate principle is maintained, cf. (234) and (235):

(234) *Wer etwas übrig hat, gibt <dem Nachbarn> zu fairen Preisen [etwas] ab.*

‘Those who have something left, give the neighbour something at fair prices.’ UID 3036

- (235) *Viktorie Märkli-Strizova will <dem Betrachter ihrer Bilder> nicht [alles] auf den ersten Blick preisgeben.*

‘Viktorie Märkli-Strizova does not want to reveal everything to the viewer of her pictures at first glance.’ UID 3088

Other cases in which the HA principle seems to be overridden are the topicalised structures, which were included during the composition of the datasets. However, the finding that in sentences such as (236) with topicalised inanimate THEMES, features like definiteness and givenness could override the impact of animacy, should neither necessarily be a problem for Harmonic Alignment. Topicalisation is a process in which a constituent is moved to the front of the sentence in order to emphasise it, and as such the sentence does not have to comply to the HA principle in the middle field (cf. Section 2.6 footnote 41).

- (236) *[Das Portemonnaie] gaben sie <ihm> laut Lindner zurück.*

‘According to Lindner, they gave him back the wallet.’ UID 2684

It seems obvious that information structure plays a role in the alternation and that topic and focus may influence the realisation of either IOC or POC. However, it bears pointing out that because of its freer constituent order, the RECIPIENT and THEME can be arranged in several ways in German, especially in IOC with complex verbs, where IOC (T-R) is quite frequent (e.g., *preisgeben*, *übergeben*, *zurückgeben*, *übersenden*, cf. Section 5.3). It is nevertheless interesting to recall Goldberg’s hypothesis with regard to information structure differences in English and consider it with regard to the German data. As explained in Section 1.2.3, Goldberg contends that syntactically different but semantically identical constructions such as the Ditransitive Construction and the Transfer Caused Motion Construction are pragmatically different as a result of the Principle of No Synonymy (Goldberg 1995: 67). She defines pragmatic differences as either information-structural or stylistic differences. Following Erteschik-Shir (1979), Goldberg (1995: 92) argues that the RECIPIENT is in focus in the Transfer Caused Motion Construction (*John gave [an apple] <to Mary>*), whereas in the Ditransitive Construction (*John gave <Mary> [an apple]*) the focus is on the THEME. In other words, the RECIPIENT is more topical than the THEME in the Ditransitive Construction (Goldberg 2002: 347). First of all, with regard to German Goldberg’s account does not seem to apply to topicalised THEMES such as *das Portemonnaie* in (236). Secondly, alternative constituent orders such as IOC (T-R) in (232), (233) or (237) in which the RECIPIENT is in focus, are quite frequent in German.

- (237) *Er sandte [seinen Fünf-Punkte-Plan] <der internationalen Kontaktgruppe>.*

‘He sent his five-point plan to the international contact group.’ UID 6155

Finally, the statistical analyses show that in German the alternation is associated with many more factors than those pertaining to information structure and the order of RECIPIENT and THEME.

In certain datasets, other factors associated with RECIPIENT or THEME than those pertaining to HA also play a statistically significant role and this leads us to the second group of significant factors. The factor **Propernounhood** indicates that RECIPIENTS that are common nouns are associated with IOC whereas RECIPIENTS that are proper nouns are associated with POC. This association is found in all the datasets, except the *geben* dataset where, strangely enough, the opposite effect is observed. That proper nouns are more often found in POC sentences seems to corroborate the observation made by Starke (1970b: IV: 243) about the greater transparency of POC as compared to IOC. As a rule, proper nouns contain no indication whatsoever as to whether they are in the accusative or in the dative case, nor is there in most cases a disambiguating article. According to Starke's view, they therefore tend to be disambiguated by a preposition.

Analogously, **Syncretism** of RECIPIENT is significant in all the datasets except in the *geben* and complex *-geben* datasets. One reason for the association in the complex *schicken/senden* dataset and the *ausleihen, verleihen, verkaufen* dataset of explicit RECIPIENTS with IOC and of non-explicit RECIPIENTS (= without overt case marking) with POC may be that language users are inclined to make explicit the syntactic function of non-explicit arguments by using an unambiguous PP. However, exactly the opposite effect is observed in the *schicken/senden* dataset where non-explicit nouns are associated with IOC. This observation weakens the rather intuitive assumption of "Streben nach Verdeutlichung" made by Starke (1970b: IV: 243), cf. Section 1.2.1. Nevertheless, parallel to the above-mentioned observation that information-structural needs can overrule the principle of HA, it is surmised that information structure might also overrule the criterion of explicitness. Most non-explicit RECIPIENTS in POC consist of proper nouns, but it is notable that with regard to the *-schicken/senden* complex and *ausleihen, verleihen, verkaufen* datasets also e.g., the pronoun *uns* 'us', usually referring to the editorial staff of the newspaper, e.g., (238) or to previously mentioned persons, frequently occurs in IOC. It is possible that the grammatical non-explicitness of this pronoun is overruled by the fact that these constituents not only have the status "given" but are also known RECIPIENTS of the transfer action and that therefore no "Verdeutlichung" by means of extra morphological marking is necessary.

(238) *Else Oppenhäuser aus Waldesch hat <uns> [das Foto] eingeschickt.*

'Else Oppenhäuser from Waldesch sent us this picture' UID 1229

Interestingly, in the *geben* dataset, the factor **Concreteness** of THEME associates abstract THEMES with IOC, and this finding (cf. Section 5.1.3) conforms with the observation that IOC is also associated with abstract **denotational class**, although the model shows some

mild collinearity between DenoClass and ThemeConc. Recall that the factor Denotational Class is meant to evaluate the sense of an utterance in context (i.e., not only the interaction of the verb with the specific arguments with which it is combined in the clause, but also the wider context of the utterance), rather than an encoded meaning on the level of the lexicon and grammar (cf. Section 4.2) and that it usually coincides with the factor Concreteness of THEME. The finding that IOC is the preferred alternant for abstract expressions concerns THEMES such as *Perspektive, ein Gesicht, Zeit, eine Chance, Selbstvertrauen geben* ‘give perspective, a face, time, a chance, self-confidence’. In 6.2.1 it will be shown that, as regards frequency, 61% of the *geben*-sentences in the dataset contain sentences that express abstract denotational class, thus also indicating that for the expression of abstract transfer, *geben* is mainly used in IOC.

Furthermore, the analysis shows that factors such as Number of RECIPIENT (plural RECIPIENTS tend to be associated with POC in the complex datasets), along with a handful of other factors not investigated by Bresnan and Ford (2010) such as Sense, Syncretism and Person of RECIPIENT, play a statistically significant role in the alternation. This again suggests that the alternation comes about as the result of the simultaneous operation of multiple factors not necessarily all related to HA.

The importance of the **verb** in the IOC/POC alternation is indicated by the statistical significance of the factor Verb itself, in all datasets, and, additionally, by the importance of the factor Sense in the *schicken/send* dataset. Many CITs for the complex verbs analysed separately (more specifically *abgeben, preisgeben, übergeben* and *verleihen*) also indicate that Sense is an important predictor for the alternation. Related to the verb, also active **voice** was found to be associated with IOC. Conversely, the finding that passive voice is associated with POC both in the *geben* and *schicken/send* datasets is presumably connected with considerations of morphosyntactic transparency (which have been shown to play a role in argument structure comprehension, cf. e.g., Czypionka et al. (2017)). The passive construction is normally realised in the form of two-argument clauses with the AGENT left unexpressed. This means that the two arguments are THEME and RECIPIENT, not AGENT and THEME as in the normal monotransitive active sentence. Given that the RECIPIENT may not be overtly case-marked in the dative (which is the case with bare nouns, 1st and 2nd person plural pronouns and many proper nouns), the coding of the RECIPIENT as a PP is a means to morphosyntactically further differentiate a two-argument sentence that actually represents a ditransitive three-argument construction in a reduced form from a monotransitive two-argument construction with the default clausal arguments AGENT and THEME.

Lastly, IOC appears to be associated with Swiss sources. The factor **Source** suggests that especially Swiss newspaper texts tend to use IOC more frequently than POC. This finding is, albeit only obliquely, in line with an observation already made by Wegener (1985: 77) about the dative in general, namely that speakers in the south of the German-speaking area accept more constructions with dative NPs in comparison to those in the north, and

that regional preferences are a factor that may play a role in the realisation of such constructions. However, Wegener only provides examples with beneficiary datives. Moreover, as explained in Section 4.2, Source needs to be interpreted with caution because newspapers tend to borrow news from news agencies located across the German-speaking world.

In sum, the overview of the most important significant factors for IOC and POC shows that the IOC/POC alternation partly conforms to the principles of HA but that it is definitely not solely HA that affects the alternation. A considerable number of (highly) significant other interacting factors, which not only pertain to RECIPIENT and THEME, but also to the verb and the AGENT, have been shown to play a role in the alternation. The multivariate analysis moreover supports the conclusion of nearly every corpus-based multifactorial syntactic alternation, e.g., Gries (2003a); Bresnan and Ford (2010); Theijssen (2012); Röthlisberger et al. (2017) on the ‘dative alternation’ in English, Gries and Wulff (2013) on the ‘genitive alternation’ in German and Chinese ESL learners, Grafmiller and Szmrecsanyi (2018) on particle placement in varieties of English, inter alia, viz. that the alternation cannot be explained solely on semantic grounds. Instead we saw that the ditransitive alternation in German is affected by a range of predictors that not only pertain to the THEME and RECIPIENT arguments but also to the AGENT argument and the verb appearing in the construction.

Recall that some researchers have tried to apply the semantic distinction between Caused Possession and Caused Motion, that is widely accepted in CxG and in the Verb Sensitive Approach as the constructional meanings for DOC and POC in English, to IOC and POC in German (e.g., Levin and Rappaport-Hovav 2011: 5; Proost 2015). Interestingly, in her discussion of the successful transfer that is assumed in the Caused Possession interpretation, Proost explicitly makes a difference between significative and denotative semantics, suggesting that successful transfer is an implicature, not an encoded feature of IOC and thus distinguishing qualitatively between two different meaning levels. This qualitative distinction that was already touched upon by Starke (1969a: 64) (cf. Section 1.2.1) and that is also maintained by Coene and Willems (2006); Willems and Coene (2006); Welke (2011); Ágel (2017); and Höllein (2019) (cf. Section 1.2.6) will be further discussed in Section 6.3 with regard to the IOC/POC alternation. In light of the fact that I situate part of my findings at the semantics/pragmatics interface, some important ensuing theoretical questions will be the following: are IOC and POC, each considered in light of the significant factors that are associated with their uses, encoded form-meaning pairings in the German language? Do they thus belong to the language-specific realm of semantics? Or are they to be considered in terms of ‘normal language use’, at the level of pragmatics, of a more general schematic construction that is itself an encoded form-meaning pairing?

6.2 The scope of the constructional variation

In the previous section, I discussed the motivating factors that emerged from the statistical analysis of the data. In this section, I turn to the first research question that targets the scope of the constructional variation between IOC and POC with the three groups of verbs under study. I will focus on the verb for two reasons: first, in line with the basic assumptions of Valency Theory, the verb is assumed to be the structural centre of the sentence; second, the statistical analysis reveals that the factor Verb is, among other factors, one of the predictors for the ditransitive alternation in present-day German. To determine the scope of the constructional variation, I measured the relative co-occurrence of both variants in contemporary corpus data. In Chapter 5, I showed that the alternation is strongly verb dependent. Not only does the valency of the verbs under study vary, as some of the verbs are mainly used in monotransitive, and less frequently in ditransitive constructions, but each verb also displays to a considerable extent different preference for either of the two variants. However, the statistical analyses indicate that the alternation is not a matter of verb valency only. Various semantic, pragmatic and information-structural factors, and the interplay of these, are also involved in the alternation. I considered these particular factors in Section 6.1 and in what follows in Section 6.2, I go into the occurrence of the alternation per case study.

In this section, I scrutinize each noncomplex verb separately, and the complex verbs as one group. Because I previously already showed how the English alternation differs from the German alternation in a number of respects, I only consider transfer verbs as described in previous research of the German alternation. First, previous analyses mainly according to a Verb Sensitive Approach of the ditransitive alternation in German are inspected with a focus on their description of the status of the verb ‘root’. Subsequently, the description by Adler (2011) of how the ‘roots’ of *geben*, *schicken* and *verkaufen* perform in the alternation is examined. For *geben*, it is investigated how and to what extent its alleged core meaning of Caused Possession is present in the instantiations that are found in the dataset. I argue that adopting an underspecified verb meaning is a coherent way to account for the infeasibility of the language-specific meaning of *geben*.

For *schicken*, I first delineate the boundaries of the alternation in accordance with the definition of ditransitive that was adopted for this study. I then proceed to a discussion of the analysis of the ditransitive alternation according to Adler (2011), who suggests that the verb’s core meaning of Caused Motion can be supplemented by an implicature of Caused Possession. I propose an account that integrates this suggestion but focuses on the semantics/pragmatics interface.

With regard to the group of complex verbs, I first discuss the observations by Wegener (1985) and Welke (1989) concerning the role of the prefix in complex transfer verbs.

Finally, I evaluate Adler's Verb Sensitive analysis of the verb *verkaufen* in terms of 'transfer of possession' and propose an alternative approach to its meaning.

6.2.1 The occurrence of the IOC/POC alternation with *geben*

A specific objective articulated in the first research question that underpins this study is to scrutinise the (occurrence of the) alternation with the noncomplex verb *geben* in present-day German. In Section 5.3.1, I showed that *geben* is more often used monotonically than ditransitively in naturally occurring data. When used in a ditransitive construction, the study shows that the claim that *geben* does not alternate (cf. Sabel 2002: 231; Rappaport-Hovav & Levin 2008: 162; Adler 2011: 20; Haspelmath & Baumann 2013 among others) cannot be maintained. Although the relative frequency of POC with *geben* is low and IOC is by far the preferred variant, the verb *geben* does occur in POC (cf. Proost (2015) who attested 1% whereas I found approximately 5% POC). Moreover, the absolute frequency of POC is high, because *geben* is without doubt an extremely frequent trivalent verb. However, this study reveals that it only alternates under specific circumstances and only with *an*-POC. This observation was already made by Starke (1970b: 246) who provides example (228) (*Lizenzen an Organisationen geben*) of *an*-POC with the verb *geben* and a collective noun in the PP. The assumption that collectivity is a significant factor for the IOC/POC alternation with *geben*, is confirmed by my statistical analysis. I discussed the other significant factors in Section 6.1.

Adler's (2011: 181) statement that, in contrast to English *give*, *geben* does not enter into the alternation with *an*-PP or *zu*-PP (2011: 189) seems to be based on Rappaport-Hovav and Levin's (2008: 161-162) assumption that languages with a "relatively free word order" (such as German) do not need two alternating forms. If information structure or heaviness of the arguments, so the argument goes, require a different constituent order, then there is the possibility to reorder the arguments and to stick to the same constructional variant. However, Adler's statement about the non-alternation of German *geben*-type verbs is at odds with the data. More importantly, Adler's analysis of *geben* also creates other problems related to the meaning of the verb.

In the Verb Sensitive Approach advocated by Rappaport-Hovav and Levin (2008) for English and by Adler (2011) for German, the meaning of the verb determines its syntactic behaviour. According to Rappaport-Hovav and Levin (2008: 134) the root of the verb, which they define as "the core meaning [...] which encodes those meaning components entailed in all uses of the verb, regardless of context", is essential to establish its argument realisation options. All the verbs in the same semantic class are said to share the same core meaning (Rappaport Hovav and Levin 1998: 99). Rappaport-Hovav & Levin (2008:

140) and Adler (2011: 191)⁸² contend that *give*-type verbs and the *geben*-type class typically lexicalise Caused Possession, for English in both alternants, for German only in IOC (cf. Figure 43). The reason why *give*-type verbs always lexicalise Caused Possession, no matter in which variant they occur, is that they do not have a PATH-argument according to Rappaport-Hovav and Levin (2008: 137). This statement is however challenged by Proost (2015: 12) for German.

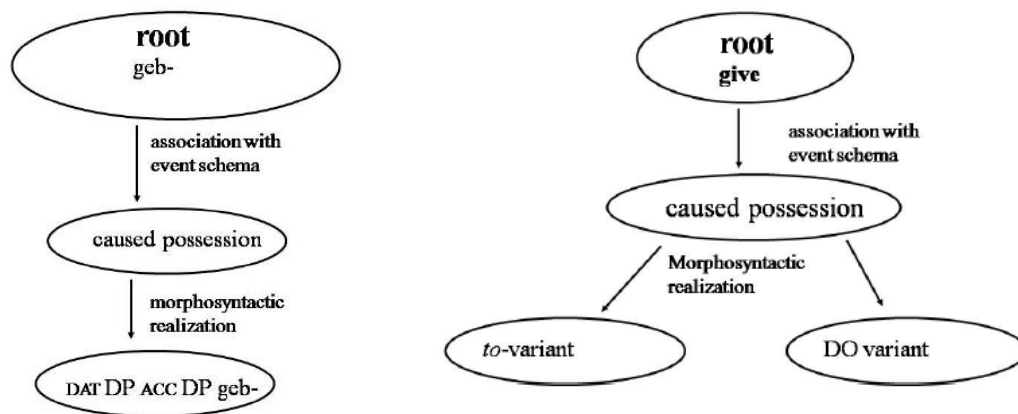


Figure 43 Adler’s representation of the single meaning option of *geben*-type verbs (2011: 195) as opposed to the single meaning option of *give*-type verbs (Adler 2011: 181)

Beavers (2011), following Harley (2003), takes it one step further and argues that with regard to English the “notion of possession encoded in Caused Possession predicates is the same as that encoded by the verb *have*”. He adopts Tham’s (2005, 2006) four relations for *have* (239), although he recognises that there may exist still other types of possession.

- | | | |
|-------|--|------------------------|
| (239) | a. John gave his wife a daughter. | inalienable possession |
| | b. John gave his wife a car. | alienable possession |
| | c. John gave his wife the car (for the weekend). | control possession |
| | d. John gave his wife the windows (to clean). | focus possession |

However, Beavers limits his study to the Caused Possession of concrete and electronic objects. Therefore, in case his approach would be applicable to the German dataset, the classification he proposes would not be sufficient to cover all the (propositional and abstract) attestations that the verb *geben* displays. This finding is an indication that Caused Possession does not suffice to cover all the data, unless the concept of possession is stretched beyond reasonable limits. Although it is tempting to associate transfer and reception with possession, I propose to construe possession not as an encoded feature of

⁸² Adler (2011: iii; 255) recognises that syntactic and discourse structure can also motivate alternations. However, this consideration cannot be applied to *geben*, which Adler considers a non-alternating verb.

geben, nor of the construction it is used in, but as a conventionalised implicature (cf. Levinson 2000). Possession is thus situated on the level of pragmatics rather than semantics.

Another attempt to capture the general meaning of ‘give’ verbs across languages is made by Newman (1996: 34), who acknowledges that the meaning of the ‘give’ verb (rendered as GIVE in Newman (1996)) has a “considerable internal complexity” and that, even if the act of giving seems to be a basic interpersonal act, it is difficult to capture its diversity in one single definition. Newman (1996: 37) breaks down the meaning of ‘give’ into four domains so as to articulate semantic structure and to deal with the verb’s polysemy. Still, under his approach, it remains necessary to assume one basic prototypical sense (“passing an object from one person to another person” (1996: 34), “to pass control over some object to someone with the hand” (1996: 15) = the ‘control’ domain). The other three senses/uses (i.e., spatio-temporal, human interest, force dynamics domains) are part of a complex matrix that is interpreted as a stack of cards or transparencies that can be looked through all at once, symbolising that “all the domains are simultaneously present in the meaning of GIVE” (1996: 53). Similar to the CxG presentation in which one central sense with radiating extensions is adopted (cf. Section 1.2.3), Newman argues that, at least for English *give*, it is not necessary to assign a privileged status to the notion of possession. Instead he considers the control sense as a (kind of) prototype from which the other senses are extensions (Newman 1996: 47).

Although my attempt to annotate *geben*-sentences according to Newman’s system turned out to be infeasible and resulted in many overlapping cases when applied to German data (cf. Section 4.2), his decomposition of the meaning of ‘give’ across languages does capture to a large extent the plethora of senses that the German *geben*-sentences display. However, in his approach of the English verb *give*, the difference between encoded meaning and inferred information (cf. Chapter 3) is ignored because Newman also includes “facts of the world”, cultural information and encyclopedic knowledge about acts of giving, i.e., inferred information, in his account of the “meaning” of the lexical unit. By contrast, if *geben* is taken to have an underspecified encoded meaning, along the lines of e.g., Coseriu (1992 [1988]), Levinson (2000) but also Frisson’s (2009) account of polysemy in language use, a single, ‘monosemous’, meaning underpins all the different senses (‘polysemy’) in the different experiential domains in which the verb is used.

Similarly, the Verb Sensitive Account struggles with deviant uses of possession as an ‘encoded’ feature. Adler (2011: 193), following Rappaport-Hovav and Levin (2008: 140), therefore introduces a distinction between Caused Possession (for *geben*-type verbs) and Transfer of Possession (for *verkaufen*-type verbs). In their analysis, *give/geben* only encodes Caused Possession. Rappaport-Hovav and Levin (2008: 140) add that “[a]lthough *give*-type verbs do not lexicalise a transfer of possession, the subject of a *give*-type verb sometimes must be understood as a source, **giving the impression** that the verb’s meaning

does involve transfer of possession” (emphasis mine, HDV). I maintain that much of the uncertainty and hesitation about the exact meaning of the verb in the Verb Sensitive Approach can be avoided if an additional semantic layer is added to Rappaport-Hovav & Levin’s account of verb meaning, effectively leading to a Three-Layer Approach to meaning. When the verb’s meaning is interpreted as underspecified as to whether it expresses possession or not, Caused Possession or Transfer of Possession can be conceived as conventionalised senses of this general underspecified meaning rather than as encoded features. If the conventionalised sense ‘Transfer of Possession’ is distinguished from the conventionalised sense ‘Caused Possession’, and if even more conventionalised senses are allowed, then an analysis in terms of meaning vs. sense can account for any use of the verb. Recourse to the putative explanation that it is *as if* “the verb’s meaning does involve transfer of possession” is then no longer necessary, because senses do not affect the verb’s encoded meaning.

Directly connecting to the proposal made above, I found that – among other factors (cf. Section 6.1) – the factor Denotational Class is statistically significant in the alternation with the verb *geben*. The abstract and propositional denotational classes are associated with IOC, whereas POC is associated with the concrete denotational class. In light of an interpretation of the alternation according to a Three-Layer Approach to meaning, this finding provides a first indication that, with regard to the verb, the alternation is situated on a qualitatively different level than the level of encoded semantics. The factor Denotational Class relates to conventionalised senses of the verb, to be distinguished from its encoded meaning.

Interestingly, in most single-layered accounts, the meaning ‘give’ (*give*, *geben* etc.) is represented as an event describing that something is handed over from the hands of the GIVER to the hands of the RECEIVER; eventually, the RECEIVER, after the act of transfer, possesses what is handed over. The event is therefore denominated as Caused Possession. In Section 1.2.4, we saw that for some researchers the English Ditransitive Construction additionally entails that the transfer must be successful for DOC to be used. Proost (2015: 10-11) challenges the successful transfer inference with regard to German and shows that the meaning of the verb, and not the alternant, determines whether successful transfer is implied or not. If we consider the *geben*-dataset, a number of other differences have to be pointed out with regard to German. First of all, if we consider the significant factor Denotational Class, only 17% of the attestations in IOC (e.g., (240)) displays the concrete sense ‘hand over’ (i.e., concrete denotational class), cf. Figure 44. In POC this sense is considerably more frequent: 57%, e.g., (241).

(240) *Der Kassierer gab <dem Räuber> [das Geld aus der Kasse].*

‘The cashier gave the robber the money from the cash register.’ UID 3806

- (241) *Der Mann darf einen kleinen Teil der Münzen behalten, muss jedoch [die meisten] <an das Museum> geben.*

‘The man is allowed to keep some of the coins but must give most of them to the museum.’ UID 3213

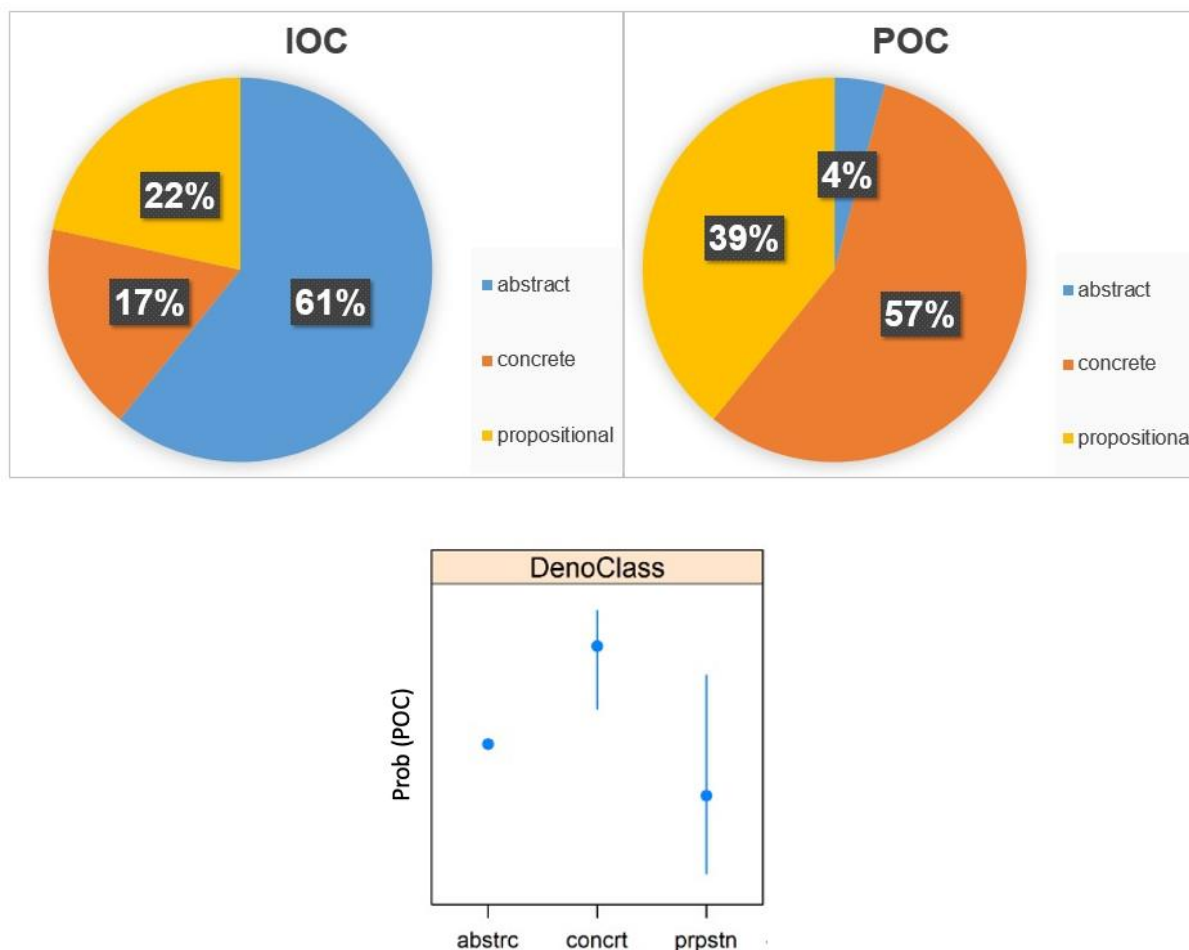


Figure 44 Proportions of Denotational Class in the *geben* dataset and effect plot

The bulk of the *geben* attestations in IOC is found with abstract (61%, e.g., (242)) or propositional (22%, e.g., (243)) denotational class. Moreover, the effect plot shows that abstract and propositional denotational class (the latter albeit with a large CI) are associated with IOC. In POC more than one third (39%; e.g., (245)) of the attestations are sentences that belong to the propositional denotational class, whereas abstract denotational class is much less frequent (4%, e.g., (244)) in POC. The effect plot confirms that concrete denotational class is strongly associated with POC.

- (242) *Die Klassenleiter Gerhard Ripper und Reiner Held wollen <den Klubs> so „frühzeitig [Planungssicherheit]“ geben.*

‘By doing so, the class leaders Gerhard Ripper and Reiner Held want to give the clubs certainty as soon as possible.’ UID 3833

- (243) *Der 35-Jährige habe <einem Drogenhändler> vor dessen Ausbruch im Juni 1999 [Tipps] gegeben.*
 ‘The 35-year-old is said to have given tips to a drug dealer before his jailbreak in June 1999.’ UID 3773
- (244) *“[Die Zuständigkeit] ist ja bei der Föderalismusreform extra <an den Bund> gegeben worden”, so der Sprecher.*
 “‘The jurisdiction was indeed given to the Confederation during the reform of the federal system,’ the spokesman said.’ UID 3570
- (245) *Wir werden [unseren Bericht] in der ersten Januar-Hälfte <an das Präsidium> geben.*
 ‘We will give our report to the presidium in the first half of January.’ UID 3512

These findings show that an analysis which takes its starting point in an allegedly prototypical realisation of *geben* in the sense of ‘hand over’ does not adequately capture the German data. By contrast, they corroborate the view that an analysis in terms of underspecification is better suited to accommodate the data. However, with regard to the verb *geben* – a verb that occurs in many different uses and with many senses (cf. the numerous senses listed under the dictionary entry) – operationalising the factor *Sense* turned out to be unfeasible in the statistical model (cf. Section 4.2).

6.2.2 The occurrence and extent of the IOC/POC alternation with *schicken* and *senden*

As reported in Section 5.2.1, with regard to *schicken* and *senden* the proportion IOC/POC differs considerably from the proportions found in the *geben* dataset. This is an indication that *geben* and *schicken* “behave” differently in the alternation, and converges with the Ditransitivity Hierarchy established by Croft et al. (2001) (cf. Section 2.4).

Some remarks are in order. First of all, the proportion IOC/POC depends on the definition of ditransitivity and the inclusion (or exclusion) of BENEFICIARIES. For comparable English research under a CxG account, a narrow definition of the concept of ditransitivity (only allowing DOC cases) is applied, so that the alternation DOC/POC equates to an alternation between the Ditransitive and the Transfer Caused Motion Construction, whereby the construction with a BENEFICIARY is also counted as ditransitive. By contrast, I apply a typologically informed approach which at the same time pays close attention to language-specific findings, yielding a fairly broad definition of ditransitive but to the exclusion of the BENEFICIARY role (cf. Sections 4.1.3 and 2.4), so that the quantitative and qualitative results I obtain may differ from the results of other accounts. The case of *schicken* and *senden* shows that it is important to delineate the boundaries of the alternation carefully, before drawing conclusions about its occurrence and extent.

Second, if pure directional POC instances (the so-called Caused Motion Constructions) are also taken into consideration, *schicken* and *senden* seem to be verbs that mainly occur in POC (cf. Table 14 with Table 15). However, in a study of alternating structures the purely directional instances are not eligible because they do not alternate with IOC, nor are they ditransitive, neither under the narrow nor under the broad definition of ditransitive.

Third, it should not be overlooked that with the verbs *schicken* and *senden*, the PP can not only be introduced by the preposition *an* but in certain cases also by the preposition *zu* and that both variants appear to alternate with IOC. This adds to the extent of the alternation. By contrast, PPs with *für* that designate a BENEFICIARY are excluded.

In sum, if the ditransitive alternation is studied according to the typologically informed definition that restricts the third argument of a ditransitive construction to RECIPIENT-like arguments and if alternating PPs with *an* and with *zu* are included, *schicken* is a verb that shows a fairly even alternation between IOC and POC, at a rate of 40% IOC to 60% POC. *Senden* alternates at a different rate of 16% IOC to 84% POC, indicating that the occurrence of the alternation is to a large extent verb dependent.

In the Verb Sensitive Approach (cf. Section 1.2.4) advocated by Rappaport-Hovav and Levin (2008) for English and by Adler (2011) for German, the difference in behaviour of *geben* and *schicken* verbs is attributed to the meaning that the verbs lexicalise and to the verb's semantic class (Rappaport Hovav and Levin 1998: 99). Importantly, whereas Rappaport-Hovav and Levin together with Adler arrange *geben* and *schicken* into different verb classes, some accounts, e.g., Wegener (1985: 264) and Welke (1989: 7), discuss *schicken* in the same group as “Verben des Besitzwechsels” ‘verbs of change of possession’, “dreiwertige >geben<-Verben” ‘trivalent >geben<-verbs’, once more indicating the intermediary status of these verbs. Rappaport-Hovav & Levin and Adler contend that whereas English *give*-type verbs typically lexicalise Caused Possession in both alternants (and the German *geben*-type class in IOC merely because it is said not to alternate (cf. Figure 43), *send*-type verbs and the *schicken*-type class only entail ‘change of location’ (Caused Motion) and not change of possession (Rappaport-Hovav and Levin 2008: 135). Yet “verbs selecting a spatial goal, such as *send*, can systematically add a recipient”, according to Rappaport-Hovav and Levin (2008: 137), and some languages also allow *send*-type verbs “to be associated with a Caused Possession event schema” (Rappaport-Hovav and Levin 2008: 137). Adler captures these statements in schematic representations for German and for English, cf. Figure 45.

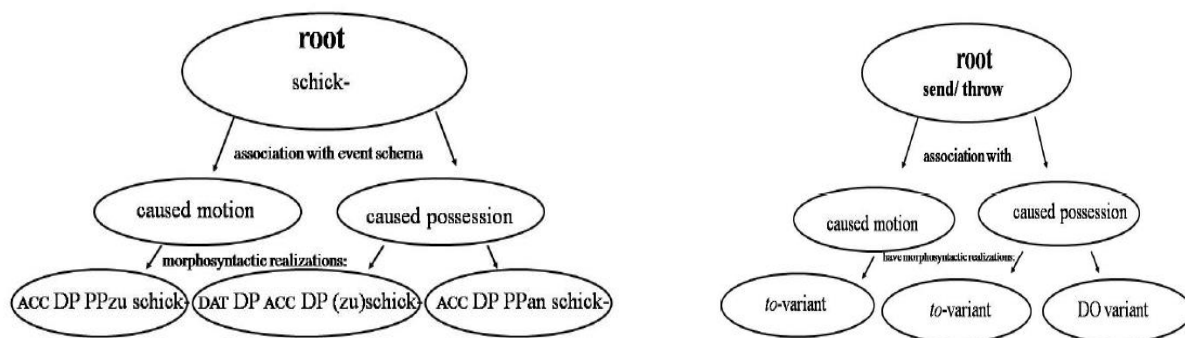


Figure 45 Adler's (2011: 216) (2011: 184) representation of the Verb Sensitive Approach to verb meaning for *schicken* and *send/throw*

Adler's analysis is very instructive for the present account. First of all, Adler analyses all instances of *schicken* as having a common "schick-" root. If, according to Rappaport-Hovav and Levin's definition of the verb's root it is "the core meaning [...] which encodes those meaning components entailed in all uses of the verb, regardless of context" (Rappaport-Hovav and Levin 2008: 134), then the verbal meaning should remain the same, and hence constitute a semantic invariant, throughout the whole instantiation process and be present in all instantiations. In Adler's analysis, the root of *schicken* verbs lexicalises Caused Motion only. However, Adler observes that the root can also be instantiated in a Caused Possession schema. Therefore Adler uses the term 'compatible with Caused Possession' and attributes the difference between the realisation of a Caused Possession schema and a Caused Motion schema to the choice of the type of goal: (human) recipients trigger the realisation of the Caused Possession schema, whereas inanimate locations trigger the Caused Motion schema, according to Adler (2011: 219). This analysis entails that the Caused Possession meaning does not stem from the root, but from the sentence arguments.

Second, following Heuer (1977), Adler (2011: 73) also introduces the concept of verbal 'completeness'. She discriminates between verbs with a 'complete' meaning (such as *verkaufen*) and verbs with "a somewhat vague" meaning (such as *geben*). She maintains that vague verbs need the other components, such as the object or the preposition, to form their 'complete' meaning. Unfortunately, Adler's account of the degree of completeness of each verb is rather intuitive. No clear criteria are provided to identify degrees of 'completeness'. Applying a layered approach to meaning, I therefore propose an analysis that instead always starts from an underspecified (cf. "somewhat vague") meaning. If an underspecified root is assumed for each and every verb from the outset, then there is no need to account for the alternation by means of the vague difference between complete and less complete verbs which has proven to be very hard to operationalise. However, the importance of the other elements in the sentence such as the objects and the choice of preposition should not be ignored. A verb with a general, underspecified root meaning can underpin any conventionalised sense that is compatible

with the root. An analysis along these lines calls for a level of a general, abstract ('monosemous') meaning on the level of encoded linguistic content (cf. Coseriu 1992 [1988]: 185-187; Levinson 2000: 20; Frisson 2009: 116). However, given that the single, underspecified root can give rise to more than one sense, it is important to point out that the CxG account (cf. Section 1.2.3) based on verbal polysemy can be incorporated into the present account, albeit on a qualitatively different level (viz. on the level of inferred senses rather than encoded meaning).

Building on Adler's analysis, I therefore propose an alternative analysis of the ditransitive alternation with the verb *schicken* (and by extension also with *senden*) (cf. Figure 46). As explained in Chapter 3, I couch my analysis in a Three-Layer Approach to meaning and start from the underspecified verb meaning '*schicken* transfer'.

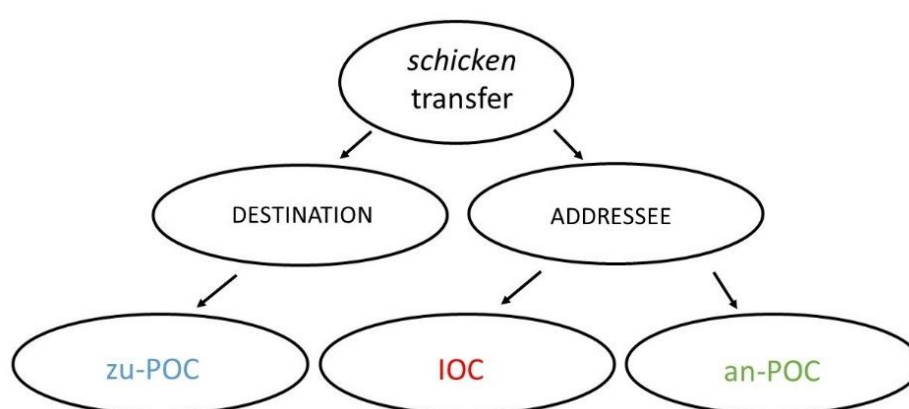


Figure 46 Representation of the Verb Sensitive Approach to verb meaning for *schicken* in the terminology of the present account⁸³

While much current research into Argument Structure Constructions concentrates on the notions Caused Possession and Caused Motion with regard to the realisation of different event schemata, I propose to focus on the nature of the third argument that is combined with the verb 'root' because it is in the realisation of this third participant that the alternation becomes apparent (recall that both IOC and POC are found with varying constituent orders, albeit to different extents). The third argument is thus the morphosyntactic 'locus' of the ditransitive alternation under study. Importantly, 'third argument' refers to a functional category, not an element of constituent order (cf. Sections 1.2.1 and 2.1). In this respect, I follow Valency Theory and construe the ditransitive construction as consisting of a verb and three arguments according to the

⁸³ Adler's IOC also includes the verb *zuschicken*. I excluded *zuschicken* from my investigation because of scarcity of POC attestations, which would also render a quantitative analysis impossible.

following hierarchical order: AGENT (subject), THEME (first object⁸⁴, Direct Object) and RECIPIENT (second object, Indirect Object) (cf. Tesnière 1959: 108; Malchukov et al. 2010: 2).

Primarily based on typological studies (Malchukov et al. 2010; Bickel 2011), I subsume the different roles the third argument can take under the general **role GOAL** (cf. Figure 47). This is because it is necessary to define the RECIPIENT role in such a way as to ensure that the IOC/POC alternation with the verbs *schicken* and *senden* is covered to its full extent (cf. Willems et al. 2019). The general GOAL role of the construction type I am investigating with the verbs *schicken* and *senden* can be realised as two different, more specific roles, viz. either as a DESTINATION or as an ADDRESSEE. However, only ADDRESSEES are RECIPIENT-like arguments and partake in the ditransitive alternation. When the GOAL is instantiated as a DESTINATION, the construction cannot be considered ditransitive. Moreover, sentences with purely directional PPs do not alternate with IOC and are therefore excluded from this study, cf. Figure 47 and Section 1.2.2, where it is argued (cf. Duden 2006: 852; 2016: 854) that the alternation is to be situated in the transition zone between objects and adverbials. However, when the third argument is realised as a “Lokaladverbiale” (as in the “Satzbauplan” [*Ich*] *hänge* [*das Bild*] [*an die Wand*]), it does not belong to this zone.

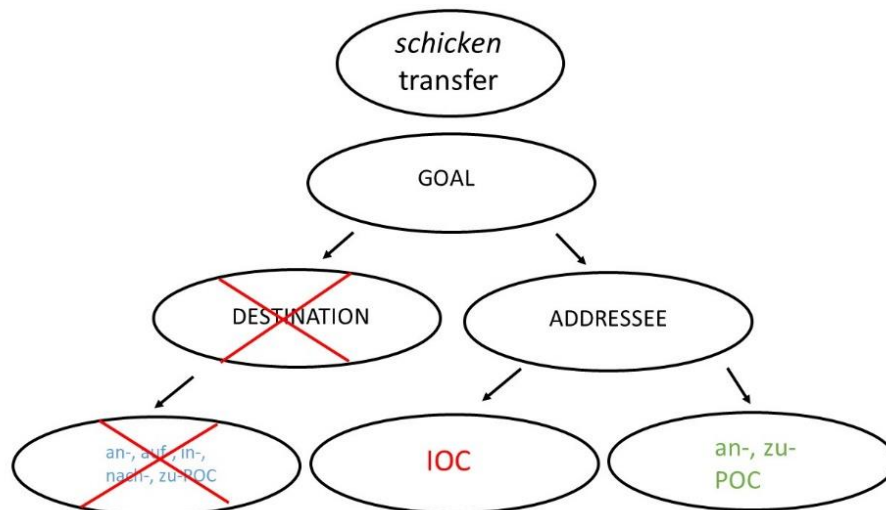


Figure 47 Delimitation of the ditransitive alternation with regard to *schicken* in the present account

My choice for the term **ADDRESSEE** for the GOAL argument (or RECIPIENT-like argument) with *schicken*/*senden* verbs is motivated by the following considerations. First, I do not use the term ADDRESSEE in the narrow sense of ‘interlocutor in communication’, which has

⁸⁴ Recall that in constructional accounts (with an analysis usually starting from the English DOC with its neutral alignment, cf. Section 2.1), the RECIPIENT argument is sometimes called ‘first object’ (cf. Section 2.6) because it is realised directly following the verb in DOC. I do not adopt this terminology given the already mentioned differences between the DOC/POC alternation in English and the IOC/POC alternation in a case language such as German. Syntactically, the third argument emerges as an Indirect Object. It is either expressed in the dative case or by means of a PP.

become common in a number of accounts (e.g., Goldberg 2006: 129). In its narrow sense, in person deixis, an ADDRESSEE is a kind of interlocutor, i.e., “any of the immediate intended recipients of the speaker’s communication, as grammaticalized in second person morphemes” (SIL 2003), (cf. also Levinson 1983: 72). My decision to use ADDRESSEE in a broader sense is inspired by several authors who also use the term ADDRESSEE when they describe German data. Starke (1970a: IV: 238) uses the term “Adressat” to specify “den Adressaten der Handlung an den sich die Handlung wendet” ‘the addressee of the action to whom the action is directed’. Matzel (1976: 177) and Wegener (1985: 224) also distinguish between “Empfänger” ‘recipient’ and “Adressat” ‘addressee’. Welke (2011: 142), following Fillmore (1968), associates the ‘Dative’ (‘Experiencer’) role with “Rezipient” and “Adressat” in German. Adler (2011: 56) uses the term ‘addressee-*an*’ inspired by the use of *an* on envelopes (e.g., *an Familie X*). Höllein (2019: 165) identifies the “Nische ADRESSATUM” as the Hauptniche for the preposition *an*. In contrast to accounts that use “Addressat” for *an*-PPs and “Empfänger” for datives, Matzel (1976: 176) argues that in German ADDRESSEES can also be expressed in the dative. I concur with his observation that in German the designation of ADDRESSEES is not restricted to PP and I therefore use the term ADDRESSEE to refer to the semantic role realised with verbs like *schicken* and *senden* (and corresponding morphologically complex verbs), i.e., for all potentially alternating instantiations with verbs that include the feature ‘send’, irrespective of their morphosyntactic form.

Second, the label ADDRESSEE is well-suited to encompass both encoded features and implicatures that come with the *schicken*/*senden* instantiations. How the difference between encoded and inferred meaning determines the extent of the ditransitive alternation with *schicken* and *senden* will be made clear in the remainder of this subsection.

According to Malchukov et al. (2010: 20), the most frequent type of a ditransitive construction is the one with an animate RECIPIENT and an inanimate THEME. Accordingly, in most instances a person or group of persons (e.g., designated by a proper name) prototypically receives an object. Although it is generally assumed that the construction should have a sentient RECIPIENT in order to qualify as ditransitive, the corpus data reveal that with regard to German a wider array of animate and inanimate THEMES and RECIPIENTS have to be taken into account.

As demonstrated before, with *schicken* (and by extension likewise with *senden*), the third argument of a POC realisation can express a DESTINATION, not only with the prepositions *in*, *auf* and *nach*, but also with *zu* and *an*, cf. (246) through (249) and Figure 47. Adler restricts her research to the prepositions *an* and *zu*.⁸⁵ In cases such as (246) through

⁸⁵ Adler also studies the prepositions *von* and (marginally) *für*. Recall that *stehlen* ‘steal’ verbs and BENEFICIARIES fall beyond the scope of this dissertation.

(248), Adler (2011: 21; 44) (cf. Figure 45) interprets *zu* as a “spatial directional preposition which denotes a direction towards a location” but also, with regard to the alternation, as the only preposition that marks a change of location. Hence, she only includes *zu*-POC as the expression of Caused Motion in Figure 45. Although she acknowledges that *an* also has a spatial use “in other environments” (cf. Adler 2011: 21, 26), she does not include *an*-POC as expressing Caused Motion. The reason why *an*-POC does not occur to the left of her scheme in Figure 45 is because she separates the concept of location, to which *zu*-POC is sensitive, from the concept of possession, to which *an*-POC and the bare dative are sensitive. In the literature, *an*-attestations are often interpreted as being alternatives for IOC, and *an* is said to have lost its spatial interpretation (cf. Adler 2011: 56) or is categorised as falling out of the class of “Direktiva” ‘directional PPs’ (cf. Ágel 2017: 510; Höllein 2019: 125). Other accounts only use *zu*-attestations as alternating forms for IOC (Levin and Rappaport-Hovav 2011), or ignore *zu*-attestations altogether. Adler (2011: 44), however, adds that the preposition *zu* often “gives rise to a possessive interpretation when the goal is a human being”.

It is important to note, with regard to my account, that neither of the directional sentences partakes in the alternation, cf. (246) through (249). However, to make matters more complicated, *an die Uni schicken* does alternate with IOC *der Uni schicken*, but only when the THEME is inanimate, as will be explained in the next paragraphs.

- (246) *Die Kreditinstitute schicken [die Kunden] lieber <zu ihren Geldautomaten>.* (excluded)
‘Credit institutions prefer to send customers to their ATMs.’
- (247) *Nach einer heißen Liebesnacht schickt Marie [Hassan] <zum Bahnhof>.* (excluded)
‘After a hot love night, Marie sends Hassan to the train station.’
- (248) *Er instruierte Haig [zehn Transportmaschinen] sofort <zu den Azoren> zu schicken.* (excluded)
‘He immediately instructed Haig to send ten transport machines to the Azores.’
- (249) *Sie schicken [ihren damals 15-jährigen Sohn] <an die Uni Würzburg>.* (excluded)
‘They send their then 15-year-old son to the University of Würzburg.’

The ditransitive alternation occurs with trivalent *schicken* if and only if the RECIPIENT-like argument is realised as an ADDRESSEE, as e.g., (250) and (251).

- (250) *Die Royal Mail schickte <der Familie> [einen Drohbrief].*
‘The Royal Mail sent a threatening letter to the family.’ UID 4866
- (251) *Doch dann schickte ein Freund [das Manuskript] <an einen Agenten>.*
‘But then a friend sent the manuscript to an agent.’ UID 4898

In my case study, I also consider **underspecified ADDRESSEES**. Following Frisson (2009: 112), I treat nouns such as *Schule, Stadt, Gemeinde, Amt, Museum, Kirche* ‘school, city, community, office, museum, church’ as underspecified with regard to their lexical meaning. This approach is based on the view that in semantics “certain features are not expressed” (Frisson 2009: 111). A word’s underspecified meaning “encompasses all semantically related interpretations [...] that are known to the reader” (Frisson 2009: 116). The nouns *Schule, Stadt, Gemeinde, Amt*, etc. can either refer to a location or to a group of persons living/working/gathering etc. there or to both at the same time. However, in pragmatics, these nouns are usually disambiguated on account of additional contextual information. The step which results in the underspecified meaning becoming more specific, is called the ‘homing-in’ stage (Frisson 2008: 117; cf. Frisson and Pickering 1999). Sentences with *an*-POC and a number of *zu*-POC instances can involve ADDRESSEES, compare (252) and (253).

(252) *Wir haben jedes Jahr [ein Schreiben] <an die Stadt> geschickt.*

‘We sent a letter to the city every year.’ UID 5212

(253) *[Das Buch] muß erst <zu Alibris> geschickt werden.*

‘The book must first be sent to Alibris.’ UID 5334

Hence, with the verbs *schicken* and *senden*, the alternation covers IOC, *an*-POC and *zu*-POC. According to Starke (1970a: V: 587), who considers IOC and POC as competing constructions, the meaning of the **preposition** in POC modifies the meaning of the whole construction. Still according to Starke, when in competition with the dative, *an* + accusative designates direction towards somebody or something, and so does *zu* + dative (at the same time *zu* is also said to designate “Zweck, Entwicklungs- oder Handlungsergebnis” ‘purpose, development or action result’). Starke also argues that the semantics of the substantive in the PP (i.e., the ADDRESSEE) reinforces the choice for POC. However, the results of my corpus study show that the alternation is not only dependent on a semantic distinction between IOC and the two prepositions, nor can the alternation be reduced to the simple claim that “*zu* is used for persons” (note that example (251) already contradicts this claim). Hence the claim is in need of further qualification: it is only when both the THEME and the ADDRESSEE are persons that *zu*-POC is the only possible prepositional alternant. Moreover, the quantitative analysis reported in Section 5.2.3 has shown that the alternation is governed by the complex interplay of various factors resulting in preferential realisations in *an*-POC, *zu*-POC or IOC.

In what follows, I adopt Starke’s and Adler’s characterisation of *zu* as a directional preposition. However, I argue that an **implicature of animacy or of recipienthood** can sometimes be added to its directional semantics, so that *zu*-POC cases can rightfully be said to instantiate ADDRESSEES rather than pure DESTINATIONS. Conversely, with regard to the ditransitive alternation it seems that the preposition *an* is a more “functional

preposition” than *zu*, in line with Duden’s (2016: 618) classification of *an* under the category of “neutrale (leere) Präpositionen als Verbindungsglied ohne eigene Bedeutung” ‘neutral (empty) prepositions as connecting element without their own meaning’ (cf. also the ‘instrumentale Bedeutung’ (Coseriu 1972: 82; 1987: 149)).⁸⁶ In the ditransitive alternation its function is to serve as an alternative for a dative NP by providing a preposition for the PP that realises the third slot of the construction.

The findings in Section 5.2.4 show that the difference between *an*- and *zu*-POC is complex and is not adequately accounted for by the straightforward statement “*zu* is for persons”. First of all, the difference lies in the combination with the THEME. Starke (1970b: 241) already observed that with *schicken*, IOC competes with *zu*-POC when the Direct Object is animate. The quantitative data confirm this observation (cf. Section 5.2.4, sense D “person”) but the findings allow me to take it one step further by also considering the Indirect Object: sense D concerns persons that are sent to persons. Qualitatively speaking, the combination of **animate THEMES with animate ADDRESSEES**, if realised in POC, is without exception realised in *zu*-POC (cf. Table 55). These instances are directional from the outset. Interestingly, *zu*-POC sentences often contain an additional **directional adjunct**, compare (254) *auf eine Farm im Norden* and (255) *in den Süden*. This extra adjunct can either indicate that the encoded directionality of the *zu*-PP is reinforced or that the directionality is divided over the *zu*-PP and the directional adjunct. This confirms Adler’s (2011: 48) observation that “it is significant for *zu* in transfer situations that *zu* always has a spatial meaning”. I therefore consider directionality to be a semantically encoded feature of the meaning of the preposition *zu* in combination with the lexical meaning of the noun governed by the preposition. The semantically encoded feature directionality cannot be cancelled, viz. it is “indefeasible” (Levinson 2000: 15).

(254) *Man schickt [ihn] <zu einem Onkel> auf eine entlegene Farm im Norden.*

‘He is being sent to an uncle to a remote farm in the north.’ UID 5294

(255) *Sie habe [die Dreijährige] aus finanziellen Gründen <zu Verwandten> "in den Süden" geschickt.*

‘(It is said that) she sent the three-year-old to relatives “to the South” for financial reasons.’ UID 5274

With regard to the *zu*-POC alternants (254) and (255), Adler (2011: 48, 189) claims that the recipient interpretation is a conventionalised implicature (“[t]he recipient meaning is additional”) when *zu* is combined with an animate complement. Although they are

⁸⁶ The ‘instrumentale Bedeutung’ refers to one of the five language-specific meanings that Coseriu distinguishes (i.e., lexikalische, kategorielle, instrumentale, innerstrukturelle and ontische Bedeutung). ‘Instrumentale Bedeutung’ qualifies the meaning of morphemes such as affixes, articles, prepositions, conjunctions etc; cf. also footnote 20 in Section 1.2.6.

directional in the first place, instances such as these do partake in the alternation with IOC, compare (256).

- (256) *Ursula Sarrazin weist alle Vorwürfe zurück, <einem Elternvertreter> schickte sie [den Anwalt].*
'Ursula Sarrazin rejects all allegations. She sent the lawyer to a parent representative.'
UID 4507

- (257) *Der Verband soll <uns> bitte öfter mal [eine Frau] schicken.*
'The association should send us a woman more often.' UID 4694

The alternation between IOC and zu-POC is even more frequent with pronominal ADDRESSEES, as in (257). Importantly, IOC/zu-POC alternation with two animate complements is only possible when the ADDRESSEE is pronominalised, not when the THEME is pronominalised: compare (258) and (259):

- (258) *Der Verband soll <uns> [eine Frau] schicken.*
Der Verband soll [eine Frau] <zu uns> schicken.
'The association should send us a woman/a woman to us.'
- (259) *Er schickt [mich] <zu den Kunden>.*
**Er schickt <den Kunden> [mich].*
**Er schickt [mich] <den Kunden>.*
'He sends me to the customers.'

Moreover, the alternation is only possible when the implicature of recipienthood can be realised. Consequently, the finding that the alternation seems to be based on inference is an important indication that it is to be conceived of as a pragmatic and not a semantic phenomenon. In other words, whereas the GOAL role can be said to be a 'semantic role' in the strict sense of the term (G. "Bedeutung") because it is encoded in the German language as part of the ditransitive construction, the ADDRESSEE role is a 'denotational role' because it is the outcome of pragmatic enrichment (G. "Bezeichnung"; 'designation' in Coseriu 1985). 'Denotational roles' rely on "implications involving general world knowledge and contextual enrichment" (Willems 2020: 25), whereas 'semantic roles' are encoded in the grammar (cf. Coseriu 1970; Welke 2011; Höllein 2019).

If IOC is analysed as always expressing Caused Possession, instances of IOC that alternate with POC should only be possible if the third argument "possesses the THEME". However, such an interpretation would require a very broad definition of **possession**, cf. Section 6.2.1 and Beavers (2011: 6). It would, for instance, entail that welcoming/meeting a person is also "possession", which clearly stretches the interpretation of "possession" and seems infelicitous. Note, moreover, that if the concept of possession is interpreted along the lines of the prototypical interpretation of Caused Possession as transfer from

the hands of the giver to the hands of the receiver (Newman 1996: 38;42), then it is extremely difficult to conceptualise the implicature that the parent representative is the possessor of the lawyer in IOC (256), whereas e.g., the reception of inanimate THEMES such as stamps or text-messages are unproblematic, compare (260) and (261).

(260) *[Die Marken] werden dann< zu vereidigten Bundesprüfern> geschickt.*

‘The stamps are then sent to sworn federal examiners.’ UID 5272

(261) *Wir schicken [SMS] <zum Dolmetscher Utz Friedrich>.*

‘We send SMS messages to the interpreter Utz Friedrich.’ UID 5356

Once again, if Caused Possession is interpreted in such a way that an embodied, concrete prototypical sense is implied, then it is difficult to account for all the data of the corpus study. The German data show that recipienthood does not necessarily imply possession, cf. (262) and (263) in which the TV channels in (262) receive but do not possess the men with masks; similarly, the day clinic in (263) receives, but arguably does not possess the patients. Therefore, to account for the German data in a coherent way, it is necessary to apply a narrow definition of the concept of possession and to distinguish possession from recipienthood.

(262) *<Kritischen TV-Sendern> schickt er [Männer mit Masken und Kalaschnikows].*

‘He sends men with masks and Kalashnikovs to critical TV channels.’ UID 5616

(263) *Kein Wunder also, dass es diese Abteilungen sind, die <der Tagesklinik> [die meisten Patienten] schicken.*

‘So it’s no wonder that it’s these departments that send most patients to the day clinic.’ UID 4972

Based on the meaning of the nouns, one would expect in sentences such as these a directional reading and *zu*-POC or *in*-POC, as in (264).

(264) *Ein Hausarzt, der die Frau samt ihrer Vorgeschichte kannte, hätte [sie] aber wohl nicht <ins Krankenhaus> geschickt.*

‘A family doctor who knew the woman and her history would not have sent her to the hospital.’ (Google search)

However, the preceding verbal context makes it clear that in (263) the NP *Tagesklinik* can be interpreted as denoting a location or a group of persons, or both indiscriminately. While referring to a building, *Tagesklinik* can be additionally interpreted in the sense of the clinic’s physicians and nursing staff. Example (263) is therefore accounted for, in the framework adopted here (cf. Chapter 3), as an instance whereby the underspecified GOAL argument can receive an animate ADDRESSEE reading by means of additional pragmatic

knowledge that resolves the underspecification. This is an example of how an underspecified meaning is “made specific in a subsequent ‘homing-in’ stage” (Frisson 2008: 117). This is in line with what has been generally claimed since 19th century case theory, namely that the dative case is strongly associated with animate arguments, cf. Wegener (1985: 285-286) who assesses the semantic label /+Belebtheit/ ‘animacy’ as the only feature that is inherent in the dative case, next to the contextual features ‘agentivity’ and ‘involvement’ (cf. Table 54). Consequently, if a NP such as *Tagesklinik* in (263) appears as an ADDRESSEE in IOC, the possibility to alternate must be based on an implicature of animacy. The table has to be interpreted as follows: the dative has three semantic properties: it is /+animate/, is less agentive than the AGENT, and less involved than the THEME. Consequently, the most agentive or active role is encoded in the nominative, the most involved entity (with trivalent verbs) is encoded in the accusative. Concerning animacy, according to Wegener, only the dative-NP gets the feature /+animate/, whereas the nominative is neutral and the accusative is statistically speaking usually inanimate, but can be animate as well.

Table 54 Hierarchy of the semantic features according to Wegener (1985: 322)

animacy	Dat	>	Nom	>	Acc
agentivity	Nom	>	Dat	>	Acc
involvement	Acc	>	Nom	>	Dat

Analogous to TV channels and clinics, other underspecified nouns such as *Schule* and *Uni* can be interpreted as denoting a location or a group of persons, or both indiscriminately. Because of the semantic underspecification, with underspecified nouns that are amenable to an interpretation in terms of a ‘collectivity’, the implicature can arise that in fact animate ADDRESSEES are intended. With **inanimate** THEMES the ADDRESSEES allow for IOC which normally seems to entail recipienthood of the ADDRESSEE, cf. (265), (266) and (267). Both prepositions can be used in the alternation of these IOCs with POC: e.g., in (266) *Rechnungen* can be sent *an die Schule* or *zu der Schule*. The difference is usually interpreted as follows: the former stresses recipienthood, whereas in the latter the emphasis is on directionality, as a result of the encoded directionality of the preposition *zu*.

(265) *Die Kidnapper des italienischen Textilunternehmers Giuseppe Soffiantini haben <einem TV-Sender> [einen Teil des rechten Ohres ihres Opfers] geschickt.*

‘The kidnappers of the Italian textile entrepreneur Giuseppe Soffiantini sent a TV station part of their victim’s right ear.’ UID 4595

(266) *Der Einzelhändler schickt <der Schule> dann [eine Rechnung].*

‘The retailer then sends the school an invoice.’ (Google search)

- (267) *Ich denke aber, die schicken <der Uni oder was auch immer es ist>, [eine Anfrage, ob der betreffende Kunde wirklich an der Hochschule eingeschrieben ist].*

‘But I think they inquire with the university, or whatever it is, whether the customer in question is actually enrolled there.’ (Google search)

However, usually these nouns allow directional *in*-PPs, *an*-PPs and *zu*-PPs alike, and combined with **animate THEMES**, the *in*-PPs, *an*-PPs and *zu*-PPs express a DESTINATION only, cf. (268), (269) and (270). Additionally, *zu*-POC carries the implicature that the intention of the sending event *zur Schule schicken* is to attend lessons.

- (268) *[Ihre jüngste Tochter, Maria], möchte sie aber nach Wörterberg (Burgenland) <in die Schule schicken>. (excluded)*

‘She would like to send her youngest daughter, Maria, to school in Wörterberg (Burgenland).’

- (269) *Sie schicken [ihre Talentsucher] nach Harvard und <an andere amerikanische Top-Unis>. (excluded)*

‘They send their talent scouts to Harvard and to other American top universities.’

- (270) *Sie bleiben entweder im Umland wohnen oder schicken [ihre Kinder] <zu einer Privatschule>. (excluded)*

‘They either stay in the surrounding area or send their children to a private school.’

In Table 55, I provide some examples, including examples that did not qualify for the dataset because they are purely directional and do not alternate. Two facts are of particular interest: first, the object ADDRESSEES that qualify as instantiations of the ditransitive construction are extremely rare (N = 3 for both IOC and POC). Nevertheless, they are viable ditransitive realisations because of the possible recipienthood inference. Moreover, with other verbs of transfer such as *verleihen*, *übergeben*, *weitergeben*, *zurückgeben*, the GOAL slot of the ditransitive construction is more frequently filled with nouns that are readily interpretable as RECIPIENTS (cf. also Adler (2011: 121) contra Wegener (1985: 293)), cf. (271) through (275):

- (271) *Durch dezente Mèches wird <der Frisur> [Struktur] verliehen.*

‘Subtle mèches give the hairstyle structure.’ UID 850

- (272) *[Flügel] konnte Engel Noname <der Geschichte> nicht verleihen.*

‘Angel Noname could not give the story wings.’ UID 1142

- (273) *[Die längste Hängebrücke der Welt] ist gestern in Japan <dem Verkehr> übergeben worden.*

‘The longest suspension bridge in the world was opened to traffic in Japan yesterday.’
UID 2409

- (274) *[Die Stämme] werden hydraulisch ergriffen und <der Schälmaschine> weitergegeben.*
 ‘The logs are gripped hydraulically and passed on to the peeling machine.’ UID 2872
- (275) *Thema von gestern waren die Abfälle, deren Entsorgung und die Frage, wie [Wertstoffe] <dem natürlichen Kreislauf> zurückgegeben werden können.*
 ‘Yesterday’s topic was the waste, its disposal and the question of how recyclables can be returned to the natural cycle.’ UID 2615

Second, the difference between an attestation which allows for a possible inference of recipienthood and an attestation which does not, may be very delicate: compare (286) *SMS an das Handy* and (287) *Karte an die Mosel* in Table 55. The difference is subtle: (286) *SMS an das Handy schicken* is therefore perhaps better construed as a sentence that relies on Particularised Conversational Implicature (PCI) instead of a Generalised Conversational Implicature (GCI) (cf. Levinson 2000: 16 and Chapter 3): it is uncertain whether every language user will interpret a technical device such as a mobile phone as immediately linked to a real receiver. However, just like a Personal Computer in (280), a mobile phone can be interpreted as belonging to a person, and thus the animacy inference can apply. The inference entails that the information which is sent to the device is also intended for the (animate) owner of the device. Conversely, a river is a location and not similarly associated with a person or persons. However, if the context of *eine Karte an die Mosel schicken* is taken into account, the sentence is amenable to further pragmatic enrichment which may pave the way for the animacy inference. The river Mosel can then be analysed as a **metonymy** for the person(s) living there, which is clarified in (276):

- (276) *Karte wurde vor 101 Jahren <an die Mosel> geschickt. Eine Erinnerung an den Betzdorfer Kaplan Joseph Jakob Christoffel weckt diese Ansichtskarte, [die] vor 101 Jahren per Reichspost von Betzdorf nach Müden <an die Mosel> geschickt wurde und jetzt wieder auftauchte. [...]. Offiziell ging die Karte zum Namensfest 1908 an die gebürtige Betzdorferin Elisabeth Aepfelbach, die damals im Haushalt “seiner Hochwürden, Herrn Pfarrer Christoffel” in Müden arbeitete.*
 ‘Card was sent to the Moselle 101 years ago. This postcard, which was sent 101 years ago by post from Betzdorf to Müden to the Moselle and has now reappeared, has awoken memories of the Betzdorf chaplain Joseph Jakob Christoffel [...]. Officially, the card for her name-day in 1908 went to Elisabeth Apfelbach, a native of Betzdorf, who at the time worked in the household of “his reverend, Pastor Christoffel” in Müden. (Rhein-Zeitung, 18.03.2009)

However, note that an IOC sentence such as *Er schickte der Mosel einen Brief* was not encountered in the data, in contrast to sentences with nouns that can be used to denote both a location and/or a collectivity such as *Klinik, Bundesgericht, Betrieb, Druckerei* ‘clinic, federal court, company, printing house’, which appear to occur in the alternation more easily.

Table 55 The GOAL argument in the *schicken* dataset⁸⁷

		GOAL			
		animate ADDRESSEE	inanimate ADDRESSEE		
	[N = 1343] ⁸⁸	individual or collective ADDRESSEE	underspecified ADDRESSEE loc.coll or loc.obj	object ADDRESSEE	object DESTINATION
IOC [N = 666]	inanimate THEME	[N = 587] (277) Sie schickte <ihrer kranken Mutter> [das Geld]. UID 4494	[N = 29] (278) [Die Medikamente] werden <der Klinik> per Kurier geschickt. UID 5738 (279) Der Bundesrat hat [die Stellungnahme] <dem Bundesgericht> geschickt. UID 4568	[N = 3] (280) Sobald jemand <dem PC> [eine elektronische Post] schickt, leitet dieser die Nummer an das Handy weiter. UID 5615	
	animate THEME	[N = 44] (281) Ursula Sarrazin weist alle Vorwürfe zurück, <einem	[N = 3] (282) Diese Abteilungen schicken <der Tagesklinik> [die meisten Patienten]. UID 4972		

⁸⁷ (277) She sent her sick mother the money. (278) The medicines are sent to the clinic by courier. (279) The Federal Council has sent the opinion to the Federal Court. (280) As soon as somebody sends the PC an electronic mail, it forwards the number to the mobile phone. (281) Ursula Sarrazin rejects all allegations, she sent the lawyer to a parent representative. (282) These departments send most patients to the day clinic. (283) Florian sent a letter to his parents. (284) The hobby cooks had sent these recipe ideas to our editorial team. (285) Tim sent this volcano postcard to his school. (286) I would have to send an SMS to the new phone. (287) Send a postcard to the Moselle. (288) The Berlin-Charlottenburg district office sent the ashes by post to Aebischer. (289) The book must first be sent to Alibris. (290) Applications can be sent to the Federal Printing Office. (291) Send transport machines to the Azores. (292) Send patrol boats to the islands. (293) Send workers to the railroad embankments. (294) You do not send a sick mayor to the medical officer. (295) In Brandenburg controllers were sent to the factory immediately. (296) Send journalists to a boat dock. (297) Send Hassan to the station.

⁸⁸ Note that for the statistical analysis only 1128 attestations were randomly selected from the original dataset of 1343.

		Elternvertreter> schickte sie [den Anwalt]. UID 4507			
POC [N = 677]	inanimate THEME	[an-POC N = 279] (283) Florian schickte [einen Brief] <an die Eltern>. UID 4885	[an-POC N = 243] (284) Die Hobby-Köche hatten [diese Rezept-Ideen] <an unsere Redaktion> geschickt. UID 4986 (285) [Diese Vulkan- Postkarte] schickte Tim <an seine Schule>. UID 4990	[an-POC N = 3] (286) Ich müsste [eine SMS] <an das neue Handy> schicken. UID 5127	(287) Eine Karte an die Mosel schicken
		[zu-POC N = 22] (288) Das Bezirksamt Berlin- Charlottenburg hat [die Asche] auf dem Postweg <zu Aebischer> geschickt. UID 5268	[zu-POC N = 5] (289) [Das Buch] muß erst <zu Alibris> geschickt werden. UID 5334 (290) [Anträge] können <zur Bundesdruckerei> geschickt werden. UID 6740	[zu-POC N = 0]	(291) Transportmaschinen zu den Azoren schicken (292) Patrouilleboote zu den Inseln schicken
	animate THEME	[an-POC N = 0]	[an-POC N = 0]		(293) Arbeiter an die Bahnböschungen schicken
		[zu-POC N = 101] (294) [Einen kranken Bürgermeister] schickt man nicht <zum Amtsarzt>. UID 5259	[zu-POC N = 24] (295) In Brandenburg wurden sofort [Kontrollure] <zu dem Betrieb> geschickt. UID 5343		(296) Journalisten zu einer Bootsanlegestelle schicken (297) Hassan zum Bahnhof schicken
		DITRANSITIVE CONSTRUCTION			

In summary, Table 55 shows that in combination with animate THEMES, *an*-POC does not alternate with IOC if the ADDRESSEE is also animate. Only *zu*-POC is then the possible alternant. In these cases, *an*-POC and *zu*-POC are in complementary distribution. The **IOC/*an*-POC alternation** is restricted to **inanimate THEMES** in combination with animate or underspecified ADDRESSEES. If inanimate nouns function as ADDRESSEES in *an*-POC, they are in the first place directional (viz. they realise the role DESTINATION without further inference), as in (276) where the river Mosel is the DESTINATION of the postcard and the real ADDRESSEE is Elisabeth Aepfelbach, and (298), where the mobile phone is the DESTINATION of the message, although recipienthood may be implied. The alternating form in IOC, as in (299), does however occasionally occur in the dataset, suggesting that the implicature of recipienthood also exists with inanimate ADDRESSEES. In such cases the NP may be interpreted metonymically, but given that such an interpretation relies on inference, it is defeasible.

- (298) *Den Erfolg der kurzen Nachrichten konnten die Ingenieure in den Telefongesellschaften der späten 80er und frühen 90er Jahre allerdings nicht voraussehen, war Mobilfunk damals doch noch nicht weit verbreitet. Neil Papworth, der 1992 [die Weihnachtsnachricht] von seinem Arbeitsplatz-Computer <an das Handy des Vodafone-Chefs> schickte, sagte später auf einer Konferenz: „Damals sah es nicht nach einer großen Sache aus.“*

‘However, the engineers in the telephone companies of the late 80s and early 90s could not foresee the success of the short messages, since mobile communications were not yet widespread at the time. Neil Papworth, who sent the Christmas message from his workstation computer to the cell phone of the Vodafone chef, later said at a conference: “It didn’t look like a big deal at the time.”’ (Nürnberger Zeitung, 03.12.2012)

- (299) *Den Rufnummernspeicher füllt das Handy mit drahtlos vom Heim-PC gesandten Adreßbüchern. Sobald jemand <dem PC> [eine elektronische Post] schickt, welche neue Nummern für das Adreßbuch beinhaltet, leitet dieser die Nummer vollautomatisch an das Handy zum Abspeichern weiter.*

‘The cell phone fills the phone number memory with address books sent wirelessly from the home PC. As soon as someone sends the PC an electronic mail, which contains new numbers for the address book, it automatically forwards the number to the cell phone for storage.’ (Salzburger Nachrichten, 17.11.1998) UID 5615

These findings support Wegener’s (1985) and Adler’s (2011: 187) claim (partly based on different data) that *an* “is the most dative-like preposition in German”, if used as an alternant to IOC and not as a directional preposition. However, Adler (2011: 39) still considers *an* as a basically spatial preposition, even when it occurs in the Caused Possession schema, because she adheres to the ‘vicinity = possession’ concept (Adler 2011: 47). In my analysis, the preposition has an abstract, purely functional role in the ditransitive alternation, in contrast to *zu*, which is primarily a directional preposition, but it can be used with an implicature of animacy.

For the sake of comparison, in Table 56 I supply examples from the *senden* dataset, in which the technical sense (*dem Fernseher ein Vollbild, Daten an den Drucker, Signale zu dem Vehikel senden* ‘send the TV a full-screen white, data to the printer, signals to the vehicle’) shows that the directional interpretation can be pragmatically enriched with an implicature of recipienthood as well. Adler (2011: 245) claims that “if *Empfänger* clearly refers to the inanimate technical receiver, the dative variant is ruled out completely”. As pointed out above, Adler bases her analysis on the animacy of the ADDRESSEE and on a possessional interpretation of IOC. However, if the alternation is accounted for as a phenomenon that is partly based on inference, then technical devices can also be conceived of as receivers, and thus RECIPIENTS, and need not be possessors. Example (304) *dem Fernseher ein Vollbild senden* proves that in German, the typological description of the GOAL argument as “the one who is given something, or the one to which something is applied” (Bickel 2011: 403) does not necessarily refer to a sentient being. Thus, the Animacy Constraint commonly associated with the DOC in English (cf. Goldberg 1995: 147), does not equally apply to the GOAL argument of a ditransitive construction in German.

Table 56 The GOAL argument in the *senden* dataset⁸⁹

		GOAL		
		animate ADDRESSEE	inanimate ADDRESSEE	
	[N = 1346] ⁹⁰	individual or collective ADDRESSEE	underspecified ADDRESSEE loc.coll or loc.obj	object ADDRESSEE
IOC [N = 660]	<i>inanimate</i> THEME	[N = 582] (300) <i>Anschließend senden die Firmen <dem Kunden> [eine separate Rechnung].</i> UID 6124	[N = 37] (301) <i>Das Hormon Insulin sendet <dem Gehirn> [Sättigungssignale].</i> UID 6281 (302) <i>Nach jedem seiner 38 Überfälle sandte er <der Polizei> [eine Postkarte].</i> UID 6538 (303) <i>Das Museum sandte <der New Yorker Bibliothek> [eine Kopie des Buches].</i> UID 6650	[N = 4] (304) <i>Eine weitere Möglichkeit ist, <dem Fernseher> über eine DVD [ein weißes Vollbild] zu senden.</i> UID 6224
	<i>animate</i> THEME	[N = 34] (305) <i>Gott hat <uns> [Slobodan] gesandt.</i> UID 5466	[N = 3] (306) <i>Autor Weiss erklärt der "Presse", warum er <"News"> [die falsche Pflegerin] sandte. "</i> UID 7054	

⁸⁹ (300) Then the companies send the customer a separate invoice. (301) The hormone insulin sends the brain saturation signals. (302) After each of his 38 raids he sent the police a postcard. (303) The museum sent the New York Library a copy of the book. (304) Another option is to send the TV via a DVD a full-screen white. (305) God has sent us Slobodan. (306) Author Weiss explains to the "Presse" why he sent the wrong nurse to "News". (307) The messages are to be sent to Heike Hansen. (308) These send the brain pain signals. (309) He has already sent a letter to the Bonn-based company. (310) What a relief if the PC could send data wirelessly to the printer. (311) Gregor gave ('sent') Daniel a questioning look. (312) Every two weeks applications are sent to the federal printing office. (313) Experts began by sending signals to the vehicle. (314) Bill Clinton sent scouts to Norbert Blüm. (315) Vossbauer has been sending employees to the restaurants since last spring.

⁹⁰ Note that for the statistical analysis only 817 attestations were randomly selected from the original dataset of 1346.

POC N = 686]	inanimate THEME	[an-POC N = 339] (307) [Die Meldungen] sind <an Heike Hansen> zu senden. UID 6830	[an-POC N = 190] (308) Diese senden [Schmerzsignale] <an unser Gehirn>. UID 6976 (309) Er habe bereits [einen Brief] <an das Bonner Unternehmen> gesandt. UID 5817	[an-POC N = 38] (310) Welche Erleichterung, wenn der PC drahtlos [Daten] <an den Drucker> senden könnte. UID 6934
		[zu-POC N = 27] (311) Gregor sandte [einen fragenden Blick] <zu Daniel>. UID 6774	[zu-POC N = 35] (312) Alle zwei Wochen werden [die Anträge] <zur Bundesdruckerei> gesandt. UID 6740	[zu-POC N = 6] (313) Experten begannen damit, [Signale] <zu dem Vehikel> zu senden. UID 6771
	animate THEME	[an-POC N = 0]	[an-POC N = 0]	
		[zu-POC N = 47] (314) Bill Clinton sandte [Kundschafter] <zu Norbert Blüm>. UID 6729	[zu-POC N = 5] (315) Vossbauer sendet seit dem Vorjahr [Mitarbeiter] <zu den Gastronomiebetrieben>. UID 6761	
		DITRANSITIVE CONSTRUCTION		

6.2.3 The occurrence of the IOC/POC alternation with complex verbs

The occurrence of the IOC/POC alternation with the complex verbs differs considerably in comparison to the noncomplex verbs. With some complex verbs there is little to no alternation (e.g., with *absenden*, *aussenden*, *entsenden*, cf. Section 4.1.2, Table 5). Other verbs show a fairly even distribution between both alternants (e.g., *übergeben*, *ausleihen*) but there are also verbs that either tend towards IOC (e.g., *preisgeben*, *zurückgeben*, *verleihen*) or POC (e.g., *weitergeben*, *weeterschicken*, *zurückschicken*, *zurücksenden*, *verkaufen*).

In previous research, not many claims have been made about alternating complex verbs, but Starke conducted a corpus study of both complex and noncomplex verbs based on 12,000 sentences (Starke 1969b: II: 164). Not all of his attestations contain trivalent verbs, though, as he is primarily interested in all kinds of alternations, only one of which is the ‘ditransitive alternation’ that is the focus of the present study. However, two of his claims about complex verbs that I investigate are of particular interest and can now be verified based on the results reported on in Chapter 5. Starke (1970b: IV: 240) found that with *abgeben* and *weitergeben*, POC is more frequent than IOC. The results of the present study confirm this claim. However, it should be borne in mind (cf. Figure 19) that *abgeben* is not often used in a ditransitive construction altogether, as more than 80% of its uses concern monotransitive instantiations. Figure 20 also shows that a considerable number of instantiations with the verb *weitergeben* are in POC. *Weitergeben* moreover belongs to the group of verbs that are mainly used ditransitively (viz., in 60% of its uses) (cf. Figure 19).

Wegener (1985: 231) associates the alternation (“the change of a dative NP into a PP”) with the prefixing of the verbs and the ensuing feature “Terminativität” ‘terminativity’, compare e.g., *jemandem etwas schenken* ‘give someone something’ and *etwas an jemanden verschenken* ‘give something away to someone’. Wegener contends that the action expressed by the prefix verb includes the object or item (“den Gegenstand”) more comprehensively than with the corresponding noncomplex verb. She accounts for this difference as follows. First, the prefix facilitates the use of the verb as a participle and an attribute compared to the noncomplex verb because it indicates the result of the action, cf. (316) and (317):

- | | | | | |
|-------|------------------------------|-----|-------------------------------|--------------------|
| (316) | <i>das verschenkte Geld</i> | vs. | ? <i>das geschenkte Geld</i> | ‘the money given’ |
| (317) | <i>der vergebene Auftrag</i> | vs. | ? <i>der gegebene Auftrag</i> | ‘the order placed’ |

Second, the aspectual difference causes a difference in usage, according to Wegener. Because the reading of the prefix verb is more holistic, the sentence with PP appears unnatural if only a small object is transferred, cf. (319) and (322):

- (318) *Er hat <dem Bettler> [ein Brötchen] geschenkt.*
 ‘He gave the beggar a bun.’
- (319) *?Er hat [ein Brötchen] <an den Bettler> verschenkt.*
 ‘He gave a bun to the beggar.’
- (320) *Er hat [sein ganzes Geld] <an die Armen> verschenkt.*
 ‘He gave all his money to the poor.’
- (321) *Er schickt <seiner Mutter> [eine Anzeige].*
 ‘He sends an announcement to his mother.’
- (322) *?Er verschickt [eine Anzeige] <an seine Mutter>.*
 ‘He sends an announcement to his mother.’
- (323) *Er verschickt [Anzeigen] <an Freunde und Bekannte>.*
 ‘He sends announcements to friends and acquaintances.’

However, 79 DeReKo attestations for “*geschenkte Geld*” and 19 for “*gegebene Auftrag*” seriously question Wegener’s first claim. Her second claim can also be checked by means of DeReKo. Although I did not include *verschicken* in the statistical analysis because there was insufficient alternation (less than 2% IOC), I did collect and annotate 200 *verschicken* attestations. Most of the THEMES in POC in the *verschicken* dataset are small objects, such as *Briefe, Unterlagen, Listen, Rechnungen, Pistolen, Fotos, eine Kamera* ‘letters, documents, lists, bills, pistols, photos, a camera’ that are sent to individuals, cf. (324) and (325). The *-schenken* verbs were not part of the study, but a DeReko and a Google search reveal many counterexamples with small objects as THEMES, e.g., knives (326), and a squeaky duck (327). Moreover, with other prefix verbs such as *verkaufen*, the dataset contains sufficient examples in POC in which small objects such as *der Pokal* ‘the trophy’, *eine Brille* ‘glasses’, *42 Gramm Kokain* ‘42 grams of cocaine’, *eine goldene Uhr* ‘a gold watch’ are sold to individuals. Instances such as these refute Wegener’s claim that a POC sentence is unnatural if only a small object is transferred.

- (324) *Böttcher hatte begonnen, [Kunstpostkarten] <an Freunde> zu verschicken*
 ‘Böttcher had started sending art postcards to friends.’ UID 10
- (325) *Wir haben <an jeden Abgeordneten> [einen Brief mit einem Spenderpaß] verschickt’.*
 ‘We have sent every MP a letter with a donor pass.’ UID 1

- (326) *Veraltet ist hingegen die Ansicht, man dürfe [Messer] nicht <an Menschen> verschenken, die einem lieb sind.*

‘However, the view that knives should not be gifted to people who are dear to you is out of date.’ (DeReKo)

- (327) *Die AfD Berlin verschenkt [eine blaue Quietsch-Ente] <an den 5.000ste Twitterfollower>.*

‘AfD Berlin is giving away a blue squeaky duck to the 5,000th Twitter follower.’ (Google search)

The results of this brief distributional case study suggest another, more plausible, reason why (320) is more natural than (319) and (323) more natural than (322). The possibility to alternate might not be dependent on the size of the object expressed in the THEME, but on the definiteness of the constituents and their order in the sentence. Note that in IOC (318) the definite RECIPIENT precedes the indefinite THEME, whereas in (319) the indefinite THEME precedes the definite RECIPIENT. An unusual constituent order renders the sentence less natural (cf. Duden 2016: 882), but not ungrammatical, as the counterexamples demonstrate. With a plausible context, e.g., *Er hat sieben Brötchen gekauft und hat ein Brötchen an den Bettler verschenkt* ‘He bought seven rolls and gave one to the beggar’, sentence (319) is acceptable (cf. also Section 2.6 on constituent order and Malchukov et al. (2010: 17), who describe *Ich gab einen Apfel dem Kind* as possible with contrastive focus on *dem Kind*, albeit in a “very unusual context”).

Similar to Wegener’s justification, according to Welke (1989: 10), the occurrence of the alternation with complex verbs depends on the prefix or on the pronominal adverb that is combined with the verb. If the prefix or pronominal adverb is directional and part of the phrasal verb, it functions as a “semantic enrichment” of the verb, according to Welke. This process allows for valency reduction, because due to the semantic enrichment by the prefix or adverb, one of the complements of the verb no longer needs to be expressed and is turned into a facultative complement. In Welke’s Valency Approach, obligatory complements (“obligatorische Ergänzungen”) must be realised according to the valency of the verb, but facultative complements (“fakultative Ergänzungen”, cf. Ágel’s (2017: 47) “dynamische Valenz” ‘dynamic valency’) can be omitted without making the sentence ungrammatical.

Welke illustrates his account with reference to the generalising prefixes *ver-*, *ab-* and *aus-*, e.g., in the prefix verbs *vergeben*, *verschenken*, *verleihen*, [...], *verschicken*, *versenden*, *ausleihen*, *abgeben*, *abschicken*, *absenden*, among others.⁹¹ According to Welke, the prefixes *ver-*, *ab-* and *aus-* in the aforementioned verbs have the effect that the transfer is to a random ADDRESSEE, who does not have to be mentioned, although he/she may exist. However, there is no longer any need to express the third argument, hence it is optional.

⁹¹ *Verpachten* ‘lease’, *verborgen* ‘lend out’, *verpumpen* ‘lend out’, *vermieten* ‘rent’.

Welke's more general use of the term ADDRESSEE as "Adressat" of a *geben*-verb, slightly differs from the more narrow definition used in this dissertation as the third argument of a *schicken/senden* verb. However, the difference is irrelevant for the following discussion.

The previously listed complex verbs are thus said to be divalent rather than trivalent, because it is irrelevant or uninteresting to whom the THEME is sold (328) or sent (329), compare:

(328) *Ich habe [mein Auto] verkauft.*

'I sold my car.'

(329) *Ein Versandhaus versendet [Waren].*

'A mail order company sends goods.'

The result of this type of valency reduction, and indirectly also of the generalisation to which it gives rise, Welke argues, is that with these verbs the ADDRESSEE almost obligatorily needs to be realised as an *an*-PP, compare (330) with (331). This, however, entails that Welke treats the *an*-PP in (330) as optional, as a "fakultative Ergänzung im engeren Sinne" 'facultative complement in the narrower sense', which, in contrast to "fakultative Ergänzungen aufgrund kontextueller Ellipse" 'facultative complements based on contextual ellipsis', can be omitted without requiring that the missing information is revealed by the context (Welke 1989: 6), i.e., when a facultative complement is realised, it adds an extra complement to the "Grundvalenz" (i.e., the most typical valency realisation) of the verb (Welke 2011: 169, 171).

(330) *Die Firma versendet [Prospekte] <an Interessierte>.*

'The company sends prospectuses to interested parties.'

(331) **Die Firma versendet <Interessierten> [Prospekte].*

'The company sends interested parties prospectuses.'

The same reasoning holds for complex verbs with the prefix *ab*-. Welke (1989: 10) first claims that the prefix *ab*- in complex verbs can provide a specific meaning, viz. an ingressive aspect, to the verb, which can also result in valency reduction. *Abschicken* and *absenden* therefore only occur in POC "teilweise obligatorisch" 'partially obligatorily'. The PP no longer expresses the role of ADDRESSEE but should be interpreted as a "Direktivum" ("Zielbestimmung" 'directional PP'), hence the valency of the verb is again reduced, cf. (332) in which *an dich* is construed as a directional PP.

(332) *Ich schicke [das Paket] <an dich> ab.*

'I will send the package to you.'

According to Welke, in case these verbs occur with a dative NP, the dative should be interpreted as *dativus commodi*, i.e., as “freier Dativ”, albeit not necessarily as an adjunct, but rather as a complement with a dual status, cf. (333) and Wegener (1985: 115). For the discussion of this intermediate status of the *dativus commodi*, I refer to Welke (2011: 86).

(333) *Ich schicke <dir> [das Paket] ab.*

‘I will send you the package.’

By resorting to the aforementioned process of valency reduction, Welke provides an explanation for why a complex *-geben* verb does not need to be combined with a third argument (e.g., a directional adverbial phrase such as an *an*-PP) when the complex verb contains a pronominal adverb which is a deictic element (e.g., *heraus-*, *hin-*, *zurück-*, *weg-* etc.). In that case, too, the addition of an ADDRESSEE is redundant. Welke (1989: 11) argues that when the complex *-geben* verb is used in its normal valency (= divalent), all relevant information is sufficiently provided without the need for an extra argument. However, it always remains possible to augment the valency of the verb and add an ADDRESSEE as a facultative complement, but the verb remains divalent, e.g., (334):

(334) *Er gibt <ihm/an ihn> [seinen Aufsatz] heraus/hin/zurück/weg.*

‘He gives his essay (back) to him/he gives him his essay/ he gives his essay away.’

Welke’s claim that the complex verbs *absenden*, *vergeben*, *verschicken* and *aussenden* occur “teilweise obligatorisch” ‘partly obligatory’ in POC is confirmed by my findings. These verbs qualified as non-alternating complex verbs based on the random samples reported on in Section 4.1.2 Table 5 (note that I did not test the verb *abschicken* in that respect). However, the claim does not hold for the complex *-geben* verbs *abgeben* and *zurückgeben*: examples (335) and (336) are POC sentences in which the third argument functions as a RECIPIENT, and not as a directional PP.

(335) *Der Blutspendedienst gibt [das Blut] dann zu fairen Preisen <an die Krankenhäuser> ab.*

‘The blood donation service then delivers the blood to the hospitals at fair prices.’ UID 2947

(336) *Für uns bedeutet dies, ein Stück weit [die Verantwortung] <an die Eltern> zurückzugeben.*

‘For us, this means giving responsibility back to the parents to some extent.’ UID 2706

Instances such as these suggest that Welke’s analysis may be adequate with regard to a number of complex verbs, but it cannot be maintained for all complex verbs. For example, *verkaufen* is presented in E-VALBU with a “Satzbauplan” that has two obligatory slots for

Subject and Direct Object (in the accusative) and one facultative slot for the Prepositional Object, but the Indirect Object (in the dative) can also be instantiated, e.g., (337):

- (337) *Der Besitzer hat <einem ausländischen Konzern> [seine Möbelfabrik] verkaufen müssen.*
 ‘The owner had to sell his furniture factory to a foreign company.’

This shows that the alternation is best approached on a case-by-case basis. A general conclusion seems to be that the directional aspect is not only provided by the meaning of the prefix but is also contained in the meaning of the root verb. Hence, *geben*, in contrast to *schicken* and *senden*, does not have a PATH element, a feature that is usually associated with *schicken* verbs, cf. Proost (2015: 16). Welke’s first claim is further falsified by examples of sentences with the verbs *zurückschicken* and *zurücksenden*. According to Welke, these verbs contain a pronominal adverb with a specific (deictic) meaning, but examples (338) through (340) show that in these sentences the third argument, both as a pronoun and as a noun, should preferably be interpreted as a genuine RECIPIENT and not as a *dativus commodi*. In (338) the context provides evidence for the fact that the magazines were effectively returned to Heinrich Lenhardt, the chief editor of the magazine, in (339) it is obvious that the bride needs to receive the ring as a result of the sending event, and in (340) the context likewise indicates that the horses were confiscated by the police and physically sent back to their owners.

- (338) *Rund zehn Prozent der Grossisten haben <ihm> [die Hefte] zurückgeschickt.*
 ‘Around ten percent of the wholesalers returned the magazines to him.’ UID 1418
- (339) *Er schickte <seiner Braut Regine> [den Verlobungsring] zurück und verkündete, sein Leben im Zölibat zu verbringen.*
 ‘He returned the engagement ring to his bride Regine and announced that he would live his life in celibacy.’ UID 1433
- (340) *Die Diebe wurden in Haft genommen und [die Pferde] <den Eigentümern> zurückgesandt.*
 ‘The thieves were arrested, and the horses returned to the owners.’ UID 2007

Recall that, according to Welke, with complex *aus-* and *ver-* verbs, the ADDRESSEE is almost obligatorily realised as *an-PP*, whereas the dative NPs in IOC are to be interpreted as BENEFICIARIES. This claim is not supported by my findings. In the *ausleihen*, *verleihen* and *verkaufen* datasets, numerous IOC realisations are attested (cf. (341) through (344)), in which the dative NP can only be explained as a RECIPIENT and not as a BENEFICIARY. Another shortcoming of Welke’s account is that he consistently invokes a concrete, prototypical interpretation of verbs such as *verleihen* and *verkaufen*, which however disregards the abstract (342) or propositional uses (344) of these verbs (cf. Section 4.2).

- (341) *Der Zoo Hannover leiht [sie] <dem Tierpark Hagenbeck> nur aus. (sie = Riesenschildkröten)*
 ‘Zoo Hannover only lends them to Tierpark Hagenbeck.’(they = giant tortoises) UID 700
- (342) *Dazu entsprechende Kontrastfarben verleihen <der Komposition> [Fröhlichkeit und Energie].*
 ‘Appropriate contrasting colors give the composition cheerfulness and energy.’ UID 830
- (343) *Der Betrüger verkaufte <den Illegalen> [Ausweise, "mit denen sie nach Österreich dürften"].*
 ‘The fraudster sold ID cards to the illegals, “with which they could go to Austria”.’ UID 280
- (344) *Das letzte Mal wurden sie von ihm visitiert, als es galt, über Land zu ziehen, um <dem Parteivolk> [den Entschluß zur Großen Koalition] zu verkaufen.*
 ‘The last time they were visited by him was when he had to go overland to sell the party people the decision to join the grand coalition.’ UID 146

The conclusion that Welke’s assertions concerning the extent of the alternation with complex verbs are only in part true but do not hold for all verbs alike, is also instructive in another respect. Judgements that are primarily based on introspection tend to start from cognitive, embodied uses of verbs and often generalise the findings to other possible uses of these and similar verbs. However, it is imperative that such generalisations are checked in corpora of naturally occurring sentences.

As discussed in Section 1.2.4, other authors (e.g., Rappaport-Hovav and Levin 2008: 136; Adler 2011; Proost 2015) link the occurrence of the alternation not to a specific prefix but to the verb class a specific verb belongs to. Under this view, verbs behave differently in the alternation depending on their semantics (“the meaning lexicalised in their root”), although most authors also acknowledge the role of the other arguments; compare the discussion in the previous subsections of the behaviour of the verbs *geben* and *schicken* in the alternation. Adler (2011: 195) adopts this view in her account of the verb *verkaufen* (cf. Figure 48), which represents a particular type of Caused Possession, viz. Transfer of Possession (Adler 2011: 212). According to Adler, this “further specification of a particular type of caused possession” is the reason why *verkaufen*-type verbs have the *an*-variant, in contrast to *geben*-type verbs which in her opinion do not alternate. However, I have shown that the verb *geben* also alternates, albeit to a lesser extent than many other transfer verbs, and Adler’s explanation is therefore unsubstantiated.

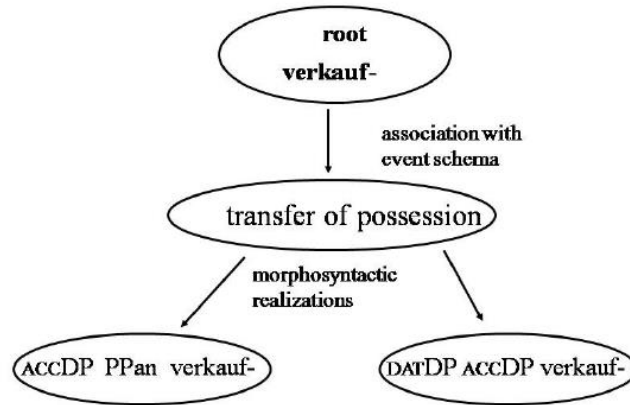


Figure 48 Adler's representation of *verkaufen*-type verbs

Another consideration to be made is that, from the point of view of semantics, it is nearly impossible to subsume the complex verbs that are the object of the present study under specific verb classes along the lines of Levin (1993). Most of the complex verbs require double classifications because they are found with senses that belong to more than one class. This observation was already made by Wegener (1985: 265), cf. Section 2.2. To give but one example: according to Duden (2016: 402), *verkaufen* is a member of the class 'Verben des Gebens und Zeigens', and from my annotation it emerged that *verkaufen* has a sense "ZahlungSumme" which entitles it to be classified as a 'Verb des Gebens'. However, if *verkaufen* is combined with an NP that expresses a propositional content, then the verb should be subsumed under the class 'Verben des Mitteilens' rather than as a 'Verb des Gebens'. Because of this double classification it is difficult to accommodate the general 'root' of *verkaufen* under one and the same verb class. This complicates any judgement about the occurrence of the alternation with certain verb classes, which in part are only seemingly well-delimited semantically.

Apart from the problem of the classification into verb classes, there is an additional problem concerning the meaning of the verbs belonging to the classes. In Chapter 3, I explained that my approach takes into account the semantics/pragmatics distinction. It starts from the assumption that each verb has an underspecified encoded meaning, which is delineated by the semantic contrasts ('oppositions') each verb entertains with verbs and their meanings of the same class. Together, these verbs form a 'lexical paradigm' (cf. Coseriu 1978a, 1978b), (cf. also Coseriu 1992 [1988]: Ch. 6-8) to which all the transfer verbs in a given language belong. I also pointed out that although the underspecified meaning is unique for each verb, its paraphrase is necessarily general. I therefore propose the general labels 'geben-transfer', 'schicken-transfer', 'übergeben-transfer', 'zurückschicken-transfer', 'ausleihen-transfer', etc. as convenient tools for the description of the paradigmatic contrasts (for discussions of the concept of contrast between the members of lexical paradigms, cf. Geckeler (1971); Coseriu (1978a, 1978b, 2001). However, the study of the statistical findings in the *geben*-complex case study (cf. Section 5.3.2) and the CITs

of the other complex verbs in which Sense was an important predictor (i.e., in the analysis of *ausleihen*, *verleihen*, *verkaufen* analysed together, and in the analysis of *verleihen* and *verkaufen* analysed separately), indicate that the preference for a specific alternant can be associated with the factor Sense, among other predictors. It is therefore again warranted to maintain that with regard to meaning, the alternation does not pertain to the level of the verbs' encoded *meanings*, but that it is a matter of conventionalised *senses* that are associated with a diverse set of other factors. This finding calls for a more specific semantic classification than just an underspecified meaning for each verb, to account for the occurrence of the alternation. It suggests that the alternation is not a matter of semantics, but of pragmatics and that in pragmatics, the verb can be associated with a range of more finely defined senses.

As a solution to the classification problem mentioned above, in case a certain verb can be classified in two different classes, Wegener (1985: 242) suggests to adopt two homonymous verbs to account for the IOC/POC alternation (cf. Section 1.2.1). For *schicken*, e.g., she distinguishes two homonymous verbs, viz. *schicken* "Transaktion" (expressing "Besitzwechsel" 'change of possession') and *schicken* "Transport" (expressing "Ortswechsel" 'change of location'); cf. also Wegener (1985: 245-246). If this solution were generalised to all alternating verbs, it would result in a long list of allegedly homonymous verbs with different meanings of their own. However, the two meanings Wegener (1985) proposes are clearly related and her decision to assume homonymy rather than polysemy seems to be primarily informed by considerations of empirical feasibility rather than empirical adequacy. It seems more appropriate to adopt only one encoded verb *meaning* with (two or more) different conventionalised *senses*, thus situating the underspecified transfer meaning of e.g., *schicken* on a qualitatively different meaning level than Wegener's two senses "Transaktion" and "Transport".⁹²

In the next section, I describe how the findings discussed in Sections 6.1 and 6.2. relate to the theoretical framework of this study, which pays due attention to the integration of CxG and VT and accommodates the findings in a Three-Layer Approach to meaning. I also address the ensuing theoretical implications.

⁹² Note that, under my account the sense "Transport" would be excluded from the study of alternations because it is purely directional.

6.3 Theoretical implications

The third research question addresses the theoretical implications that ensue from the corpus findings with regard to the theory of Argument Structure Constructions such as the ditransitive construction, in particular regarding a construction's variation in form and meaning.

As explained in Chapter 3, with regard to the variation in linguistic content associated with the IOC/POC alternation the present study adopts a layered approach: along the lines of authors such as Coseriu (1970, 1979, 1992 [1988], 2001) and Levinson (2000) it is examined how a distinction can be drawn between what is encoded in the language and what has to be considered as inferred information. The distinction between code and inference is equated to the distinction between semantics and pragmatics (cf. also Carston 2002a; Ariel 2008; Carston 2008; Ariel 2010). According to this view, as was already explained in Chapter 3, the linguistic code itself contains encoded *meaning*, whereas inference enriches the encoded meaning resulting in various *senses*. Language users add inferred meaning in the process of utterance interpretation. For a more elaborate delineation of the semantics/pragmatics interface, I refer to De Vaere et al. (2020); Belligh and Willems (2021).

In this section, I first discuss why IOC and POC cannot be considered as encoded form-meaning pairings in the German language. I demonstrate that IOC is not dedicated to conveying the meaning that an entity is transferred to a RECIPIENT (Caused Possession), nor is POC dedicated to the meaning Caused Motion, although the corpus findings show that POC is the pattern of choice to express this sense. Subsequently, I explain that for an accurate description of the IOC/POC alternation in agreement with the semantics/pragmatics distinction, it is appropriate to posit an overarching, more schematic ditransitive construction, which I term AGENT-THEME-GOAL Construction in line with the typological definition of the GOAL argument found in Bickel (2011: 402). The role of the concept of underspecification with respect to this overarching construction (in semantics) is also addressed. One level of schematisation further down, I contend that IOC and POC are allostructions (rooted in pragmatics) of the general schematic construction or encoded constructeme, and I consider them in terms of 'normal language use' of the ditransitive construction.

I now turn to the question what the two constructions IOC and POC actually share in the German language at the level of encoded linguistic content.

In order to demonstrate that neither IOC nor POC are dedicated to designating the transfer of an entity (something or someone) to a RECIPIENT, a brief distributional analysis may be in order. IOC, the syntactic configuration involving a Subject in the nominative, a Direct Object in the accusative and an Indirect Object in the dative, is admittedly the pattern of choice to convey this particular kind of transfer in German. But this particular

kind of transfer is not the encoded linguistic content of IOC. This observation is particularly important. We could of course permit, along with Goldberg (1995: 38), polysemy links (cf. Section 1.2.3) in German as well, to extend the construction meaning ‘X CAUSES Y to RECEIVE Z’ (Caused Possession) associated with core transfer verbs such as *geben* in order to cover, e.g., ‘enable’ (*erlauben* ‘permit’), ‘conditions of satisfaction’ (*versprechen* ‘promise’), ‘intention’ (*backen* ‘bake’) or ‘negation’ (*verweigern* ‘refuse, deny’). However, this would still not warrant the conclusion that in German IOC necessarily involves transfer of an entity to a RECIPIENT. In sentences with three arguments, of which the third argument is in the dative, not all the sentences that are formally equivalent to “IOC” are considered as instantiations of the ditransitive construction with a RECIPIENT-like third argument (according to the definition applied in this study). The dative object can also be a BENEFICIARY (345), a MALEFICIARY (346), an EXTERNAL POSSESSOR (347), a *dativus iudicantis* (348), an ethical dative (349) or an argument that designates a “less specific” role (Duden 2016: 830) such as in (350) and (351)⁹³; cf. Willems (2020) for discussion. Compare:

- (345) *Jüngst hat eine Großmutter <ihrem Enkel> [einen rot-weißen Pullover] gestrickt.*
 ‘A grandmother recently knitted a red and white pullover for her grandson.’ (Rhein-Zeitung, 05.09.2015)
- (346) *Ciaran zerbrach <ihr> [die Flöte] und warf sie von ihr weg.*
 ‘Ciaran broke her flute and threw it away from her.’ (Google search)
- (347) *Da schneidet sie lieber noch <ein paar Politikern> [die Haare].*
 ‘She would prefer to cut the hair of a few politicians.’ (Süddeutsche Zeitung, 29.09.2000)
- (348) *Du gibst <dem Vater> [zu viel Geld] aus.*
 ‘According to your father you spend too much money.’ (Wegener 1985: 119)
- (349) *Das war <mir> vielleicht [ein komischer Traum]!*
 ‘[Gosh!] That was a strange dream!’ (Duden 2016: 263)
- (350) *Man darf [ein Kleinkind] nicht <der Sonne> aussetzen.*
 ‘You cannot expose a toddler to the sun.’ (Duden 2016: 830)
- (351) *Otto entnahm <der Schachtel> [einen Packen alter Fotografien].*
 ‘Otto removed a pack of old photographs from the box.’ (Duden 2016: 830)

⁹³ Note that under a CxG account, e.g., (345) would qualify as “Agent intends to cause recipient to receive patient” and (351) as “Agent causes recipient not to receive patient” (cf. Goldberg 1995: 38 and Figure 4). For cases such as (350), an extra semantic verb class could be envisaged, e.g., “influence” (Coleman 2006: 439 and cf. Section 2.3). This is however not the line of analysis proposed in this study.

Conversely, the construction meaning ‘X CAUSES Y to RECEIVE Z’ can also be expressed by means of configurations other than “IOC”, particularly the construction combining a RECIPIENT argument in the accusative with a Prepositional Phrase (PP) designating the THEME (as a rule, a phrase introduced by *mit*), cf. the examples in (352) and (353):

- (352) *Seit 60 Jahren versorgt die Hamburger Morgenpost <Leserinnen und Leser> [mit Nachrichten].*
 ‘The Hamburger Morgenpost has been providing readers with news for 60 years.’
 (Hamburger Morgenpost, 16.09.2009)
- (353) *Abends beschenkte der Nikolaus <die Kinder> [mit Süßigkeiten].*
 ‘In the evening, Saint Nicholas gave the children sweets.’ (Braunschweiger Zeitung, 05.12.2005)

Furthermore, in German, Caused Possession can also be expressed by morphologically more complex subordinate clause structures such as (354) and (355):

- (354) *Die sportliche Frau sitzt mittlerweile an der Kasse und sorgt dafür, dass jeder seine Eintrittskarte bekommt.*
 ‘The sporty woman is now sitting at the cash register and ensuring that everyone gets their ticket.’ (Rhein-Zeitung, 18.06.2009)
- (355) *Der mehrjährige Pakt soll mit finanziellen [...] Maßnahmen verbindlich sicherstellen, dass jeder Jugendliche einen Ausbildungsplatz erhält.*
 ‘The multi-year pact is intended to ensure, through financial measures, that every young person receives a training position.’ (Nürnberger Nachrichten, 08.05.2004)

Hence, IOC is not confined, as a form-meaning pairing, to the expression of a transfer of an entity to a RECIPIENT. From the perspective of a layered approach of linguistic content, this means that transfer of an entity to a RECIPIENT is not the constructional meaning of IOC in German. It is, however, a possible sense of IOC, i.e., one of the senses IOC can be used to convey, along with other senses such as those expressed in examples (345) through (351). At the same time, the construction meaning ‘X CAUSES Y to RECEIVE Z’ is not confined to IOC but can also be expressed in other ways in German, more specifically by the applicative construction (i.e., the *mit*-configuration in (352) and (353) and constructions involving subclauses such as (354) and (355)).

With regard to POC, similar observations can be made. Sentences with three arguments and a Prepositional Phrase as the third argument (hence sentences that are formally equivalent to “POC”), can be used to express several senses, one of which is the transfer of an entity to a RECIPIENT (cf. Proost 2015: 16). In the data, this use is particularly common with verbs such as *schicken* and *senden* as well as many complex forms of the verb *geben*,

including *preisgeben*, *zurückgeben* and *weitergeben*. Compare the examples in (356) through (361):

- (356) *Bisweilen habe die Ärztin auch ungefragt [Rezepte] <an ihre Patientinnen> geschickt.*
'Occasionally the doctor also sent prescriptions to her patients without being asked.'
UID 5011
- (357) *Unsere Aktion soll [ein Signal] <an die verantwortliche Politik> senden.*
'Our action should send a signal to the responsible politicians.' UID 6042
- (358) *Und wir geben [weniger Know-how] <an die Konkurrenz> preis.*
'And we divulge less know-how to our competitors.' UID 3039
- (359) *Anwohner riefen die Polizei, die [die Tiere] wieder einfing und <an den Wanderzirkus> zurückgaben.*
'Residents called the police, who intercepted the animals and returned them to the travelling circus.' UID 2714
- (360) *[Dieses Gefühl] will er <an andere> weitergeben.*
'He wants to pass on this feeling to others.' UID 2832
- (361) *Landwirte müssen schon jetzt häufig [ihren Vorrat an Winterfutter] <an die Tiere> geben.*
'Farmers are already compelled to feed their stocks of winter fodder to the animals.' UID 3350

Other senses involve (362) "Communicative transfer" (cf. Coleman 2006: 297), (363), (364) "Motivation", (365) "Classification":

- (362) *Er verriet [ihn] <an seine Feinde>.*
'He betrayed him to his enemies.'
- (363) *Die Sendung regt [die Zuschauer] <zum Nachdenken> an.*
'The broadcast urges the spectators to reflection.'
- (364) *Sie überredeten [ihn] <zum Mitmachen>.*
'They persuaded him to join in.'
- (365) *Wir zählen [ihn] <zu unseren Freunden>.*
'We count him among our friends.'

However, in German, too, POC is the pattern of choice to convey Caused Motion, comparable to English (Goldberg 1995), yet with the important language-particular qualification that in German various prepositions (*in*, *auf*, *nach*, *zu*, *an*) are used to

designate a DESTINATION, as was shown in Section 6.2.2. These prepositions usually correspond to a single preposition (to) in English. Compare, e.g., the sentences with various PPs with the verb *schicken* ‘send’ in (366) through (370). However, these instantiations do not alternate with IOC (cf. Section 6.2.2) and are therefore excluded from the analysis of the IOC/POC alternation.

- (366) *Heute schickt niemand mehr [Helfer] <in den Irak>.*
 ‘Today no one sends any more helpers **to** Iraq.’ (excluded)
- (367) *Als er zwölf war, schickten [ihn] seine Eltern <auf die Schule für kreative und darstellende Künste in Cincinnati>.*
 ‘When he was twelve, his parents sent him **to** the School for Creative and Performing Arts in Cincinnati.’ (excluded)
- (368) *Der Monarch schickte [französische Truppen] <nach Amerika> in den Kampf gegen die Engländer.*
 ‘The monarch sent French troops **to** America in the fight against the English.’ (excluded)
- (369) *Die Polizei schickte [einen Streifenwagen] <zu der Adresse>.*
 ‘The police sent a patrol car **to** the address.’ (excluded)
- (370) *Sie schicken [ihren damals 15-jährigen Sohn] <an die Uni Würzburg>.*
 ‘They send their then 15-year-old son **to** the University of Würzburg.’ (excluded)

In addition, *schicken* also regularly takes GOAL arguments in the dative, as was shown in Section 6.2.2, compare e.g., (371):

- (371) *[Den grössten Teil ihres Gehalts] schickt sie <ihren Eltern>.*
 ‘She sends most of her salary **to** her parents.’ UID 4739

In German, Caused Motion can be expressed by several structures, e.g., the applicative construction NP_{AGENT} V NP_{ACC} PP_{mit + DAT} in (372) or NP_{AGENT} V NP_{ACC} in (373) and (374):

- (372) *Er besprüht die Wand mit Farbe.*
 ‘He sprays the wall with colour.’
- (373) *Der Springbrunnen versprüht das Wasser.*
 ‘The fountain sprinkles the water.’
- (374) *Paul schießt den Ball weg.*
 ‘Paul shoots the ball away.’

The upshot of this distributional analysis of IOC and POC in German is that neither of these patterns has transfer of an entity to a RECIPIENT as encoded *meaning*, yet this

particular event type occurs as the *sense* of both of them in the sentences that were analysed. This sense is moreover regularly encountered with both patterns in the data. In accordance with the Constructionist Approach to syntax, which recognises and identifies various levels of schematisation (cf. Hilpert 2014; Van de Velde 2014; Diessel 2019; Perek 2020; Smirnova and Sommerer 2020), I therefore posit an overarching configuration on the level of the encoded linguistic content as part of German grammar from which both the formal and semantic properties of the alternation can be derived. The above discussion implies that for this to be possible, the configuration must pair a constructional form with a general ('underspecified') constructional meaning, analogously to the underspecified verbal meanings adopted in 6.2.1 and 6.2.2.

Willems and Coene (2006: 264) call the underspecified meaning of a construction the "Satzmusterbedeutung" 'sentence pattern meaning'. It states the types of constituents and their mutual relationship in contrast to other constructions and as such indicates the grammatical meaning of the "Satzmuster" or 'sentence pattern' (cf. Section 1.2.6). Contrasting constructions of the ditransitive construction include first and foremost the monotransitive construction (e.g., *Hans besuchte Paul* 'Hans visited Paul' or *Der Kirschbaum hat schöne Blüten* 'The cherry tree has beautiful flowers') and the applicative construction (e.g., *Sankt-Nikolaus beschenkt die Kinder mit Süßigkeiten* 'Saint Nicolas bestows candy upon the children').

For the ditransitive construction represented in (375) the grammatical meaning indicates that an AGENT-like argument (the subject) transfers a THEME-like argument (the first object) to a RECIPIENT-like argument (the second object)⁹⁴, with the term ditransitive referring to both IOC and POC:

(375) *Subjekt + Verb + Objekt₁ + Objekt₂*

At this encoded level, no lexical meaning is yet associated with the pattern. The pattern in (375) does not determine how the second object is formally realised, and it is left open whether the third slot will be filled by a case-marked NP or by a PP, resulting in either IOC or POC. In German, the ditransitive pattern includes that the subject will be realised in the nominative and the first object in the accusative. However, the morphosyntactic realisation of the second object remains underspecified, in line with the typological observation (Malchukov et al. 2010: 1) that the formal manifestation of the third argument is not relevant for the construction to be defined as ditransitive.

The pattern in (375) is independent of the valency of the verb, so that not only trivalent verbs, but also divalent verbs can fit into the pattern. In constructional terms: when the divalent verb *backen* is coerced into a ditransitive construction such as (376) and the

⁹⁴ First object, second object: recall that, unlike in CxG, I term the THEME the first and the RECIPIENT-like object the second object.

context indicates that his mother is indeed the RECIPIENT of the cake, then the sentence can be interpreted as an instantiation, through the mechanism of coercion, of the ditransitive construction. The verb itself remains divalent.

(376) *Er backte <seiner Mutter> [einen Kuchen].*

‘He baked a cake for his mother.’

However, the RECIPIENT interpretation is not mandatory: an alternative interpretation of (376) is that the cake is baked for the benefit of his mother without his mother receiving it. Note that the BENEFICIARY interpretation need not be construed as an instantiation of the ditransitive construction in German, given that BENEFICIARIES can be added to verbs with any valency, but even if the three-place ditransitive construction is regarded as ‘host’ for the BENEFICIARY interpretation in sentences such as (376), the RECIPIENT interpretation is not compulsory (cf. Willems (2020) for extensive discussion and examples).

I now turn to an account of the form-meaning properties of the general overarching configuration, the ‘construction’ in the strict sense of the term, as defined in Goldberg (1995). As I argued before (Section 2.1), it is desirable to specify the general make-up of the overarching configuration in German in line with typological research of the ditransitive construction (Malchukov et al. 2010; Bickel 2011; Haspelmath 2013). A number of typological features are straightforward. The configuration is characterised by a predicate and three argument roles which I have termed AGENT, THEME and GOAL (following Bickel 2011, among others). I refer to the overarching construction as the **AGENT-THEME-GOAL Construction**, or **ATG Construction** for short. Its three argument roles are schematic (‘slots’) with regard to the participant roles of the various classes of three-place transfer verbs that instantiate the configuration (cf. also Proost 2015). It is important to recognise that the configuration is a pattern or ‘template’ that can also be instantiated by verbs with a different valency, in which case the verb is coerced by the construction into a GOAL reading which does not fall under the verb’s basic valency (e.g., *stricken* ‘knit’, *schneiden* ‘cut’, *backen* ‘bake’ etc.) (cf. Willems and Coene 2006; Welke 2011: 195). Recall that IOC is not dedicated to expressing transfer in German, the dative object can also be, e.g., a BENEFICIARY, cf. (345) or an EXTERNAL POSSESSOR, cf. (347).

What are the coding properties of the **ATG Construction**? Basing the description on the unmarked active sentence, the AGENT argument is the morphosyntactic Subject which in German is coded in the nominative. The THEME argument is the Direct Object coded in the accusative. The GOAL argument is coded obliquely, either as a dative NP or a PP, which is not surprising given that the semantic role GOAL encompasses sentient RECIPIENTS and non-sentient DESTINATIONS. However, in Section 6.2.2 on *schicken/senden* it was shown that in German also non-sentient nouns are found as the third argument of IOC and this is

likewise the case with the other verbs under study (cf. (377) through (381) for examples with *geben*, *verleihen*, *übergeben* and *verkaufen*).

- (377) *<Einem entsprechenden Gesetz> gab der Bundesrat gestern ebenfalls [seine Zustimmung].*
'The Federal Council also gave its consent to a corresponding law.' UID 3724
- (378) *Der glasklare Sopran gibt <dem Wein> [eine besondere Würze].*
'The chrystal-clear soprano gives the wine a special flavour.' UID 3811
- (379) *Dazu entsprechende Kontrastfarben verleihen <der Komposition> [Fröhlichkeit und Energie].*
'Appropriate contrasting colours give the composition cheerfulness and energy.' UID 830
- (380) *Nach Begrüßung und Dankesworten der Schulleitung übergab die Klassenlehrerin [den Barfußpfad] <seiner Bestimmung>.*
'After being welcomed and thanked by the school management, the class teacher inaugurated the barefoot path.' UID 2321
- (381) *<Der Österreichischen Nationalbibliothek> verkaufte er kürzlich [einen großen Teil seines Nachlasses].*
'He recently sold the Austrian National Library a large part of his estate.' UID 73

However, the coding of the GOAL argument by means of a PP does not automatically entail that the semantic role GOAL is intended (or, alternatively, should be interpreted) as a DESTINATION rather than a RECIPIENT. In terms of the aforementioned constructional meanings proposed for English, it would therefore not be correct to assume that in German, too, POC draws on a Caused Motion meaning to express, via metaphor, the construction meaning 'X CAUSES Y to RECEIVE Z' normally associated with IOC. As already pointed out by Proost (2015), in German the ditransitive ASC with a sentient RECIPIENT can be realised as POC as well, as is evident from the *geben* examples (382) through (384) and sentences with *schicken* and *senden*, *übergeben*, *weitergeben*, *verkaufen* and *ausleihen*, cf. (385) through (391). Proost (2015) also convincingly shows that the issue whether transfer is successful or not (cf. Goldberg 1995, Rappaport Hovav & Levin 2008) has no bearing on the IOC/POC alternation in German.

- (382) *Über Mikro und Kopfhörer gibt die Diplom-Psychologin [Anweisungen] <an den Studenten>.*
'The psychologist gives instructions to the student via the microphone and headphones.' UID 3283
- (383) *Die Hausverwaltung, so Schmidt, würde [die Informationen] <an den Eigentümer> geben.*
'According to Schmidt, the property management company would give the information to the owner.' UID 3535

- (384) *Hier konnte Hebisch [einen guten Tipp] <an die Kameraden> geben.*
 ‘Here Hebisch was able to give a good tip to the friends.’ UID 3366
- (385) *Bisweilen habe die Ärztin auch ungefragt [Rezepte] <an ihre Patientinnen> geschickt.*
 ‘At times, the doctor also sent prescriptions to her patients without being asked.’ UID 5011
- (386) *Witali Klitschko hat [eine letzte Drohung] <an Lennox Lewis und Mike Tyson> geschickt.*
 ‘Vitali Klitschko made a final threat to Lennox Lewis and Mike Tyson.’ UID 4936
- (387) *Drehbuchautorin Melissa Rosenberg habe angeblich [einen ausführlichen Entwurf] <an die Filmemacher> gesendet.*
 ‘Scriptwriter Melissa Rosenberg allegedly sent a detailed draft to the film-makers.’ UID 6101
- (388) *Stiftungsvorsitzender Gerd Glogowski übergibt [das neue Buch] <an Carl Lauenstein>.*
 ‘Chairman Gerd Glogowski is handing over the new book to Carl Lauenstein.’ UID 2466
- (389) *Für einen kleinen Kostenbeitrag werden [die Spenden] <an die Kunden> weitergegeben.*
 ‘For a small contribution to costs, the donation will be passed on to the customers.’ UID 2927
- (390) *In den großen Pausen wurden [Kuchen und Kinderpunsch] <an die Schüler und Lehrer> verkauft.*
 ‘During the long breaks, cakes and punch for children were sold to the students and teachers.’ UID 318
- (391) *Ja, [die „Wii“] habe ich momentan <an meine Neffen> ausgeliehen, aber die „PlayStation 3“ habe ich zu Hause und spiele auch damit.*
 ‘Yes, I currently lent the “Wii” to my nephews, but I have the “Playstation 3” at home and also play with it.’ UID 711

Further evidence that the ATG Construction is an encoded form-meaning pairing in its own right is provided by the fact that the underspecified transfer meaning involving a THEME is present in all its instantiations, without exception, and hence a non-defeasible feature of the construction meaning. Defeasibility (or cancellability) is the main criterion put forward by Levinson (2000) and others to distinguish between encoded and inferred meaning (cf. De Vaere et al. 2020). Thus, the non-defeasibility of the THEME-related transfer meaning provides additional evidence for full constructionhood of the ATG Construction.

Against the background of the above discussion, the quantitative findings of the corpus analysis, which reveal that IOC and POC are associated with partly different morphosyntactic, semantic, pragmatic and information-structural factors, are

particularly revealing. These findings point to the pivotal role of the **intermediate level of ‘normal language use’** in the explanation of the data, in two complementary respects.

On the one hand, the above distributional analysis demonstrates that the IOC/POC alternation in German cannot be accounted for, as far as linguistic content is concerned, in terms of two constructions that differ in encoded meaning (cf. Chapter 3). An examination of both the transfer verb and the three-argument ATG Construction instead supports a layered approach to linguistic content, in which the analysis takes its starting point, in semantics, in an underspecified verbal transfer meaning and an underspecified ATG constructional meaning. With respect to the latter, the instantiation of the construction as either IOC or POC builds on the meaning of the ATG Construction but is associated with a range of varying motivating factors that are of a pragmatic nature.

On the other hand, the corpus analysis also shows that the occurrences of IOC and POC are no realisations on a one-off basis: their readings reflect the pervasive role of a handful of conventionalised senses which in turn are associated with various factors for which the data was annotated. These senses and associations concur to establish strong tendencies in language use, albeit in a non-exclusive manner. For instance, the strong tendency for IOC to occur with the abstract denotational class (sense) of *geben* in combination with an abstract THEME and an animate (= individual) RECIPIENT contrasts with the no less notable tendency for POC to occur with the concrete denotational class (sense) in combination with a RECIPIENT that either designates a collective entity (e.g., *Team* ‘team’, *Präsidium* ‘executive committee’) or allows for both a concrete locative or an abstract institutional reading (e.g., *Ministerium* ‘government department, ministry’) and passive voice. With regard to the verbs *schicken* and *senden*, comparable tendencies can be observed: IOC is also associated with individual RECIPIENTS and active voice, whereas POC is observed with collective, underspecified and inanimate RECIPIENTS and preferably occurs in passive voice. The difference between abstract vs. concrete and propositional denotational class is less prominent with these verbs, because they mostly occur with concrete senses.

In the *geben* dataset, no comparison with other verbs was made. With regard to *schicken/senden* and the complex verbs, the factor Verb was found to be highly significant in the analysis. First, in the general models, the effect of the factor Verb indicates that there are significant differences among the verbs. Certain verbs tend to prefer IOC, whereas others show a preference for POC. Consequently, the IOC/POC alternation is apparently to a considerable extent verb dependent and not verb class dependent (cf. Levin 1993; Rappaport-Hovav and Levin 2008; Adler 2011) and Section 1.2.4. That tendencies unequivocally differ across different verbs with regard to the IOC/POC alternation reflects their varying degrees of conventionalisation in ‘normal language use’. Such differences are partly due to the different encoded lexical meanings of the verbs, including their valency (cf. Duden 2016: 856, 886). For instance, the occurrence of IOC in the following sentence with the verb *schicken* is unusual in the data:

(263) *Kein Wunder also, dass es diese Abteilungen sind, die <der Tagesklinik> die meisten Patienten schicken.*

‘No wonder, then, that it’s these departments that send most patients to the day clinic.’
UID 4972

In Section 6.2.2 it was shown that in (263) *Tagesklinik* is an example of how a noun that can denote a location or a group of persons or both at the same time, is made specific by the context and interpreted as the clinic’s physicians and nursing staff. (263) was therefore explained as an instance of specification of a semantically underspecified noun by (default) pragmatic enrichment where the underspecified meaning is “made specific in a subsequent ‘homing-in’ stage” (Frisson 2008: 117; cf. Frisson and Pickering (1999). This process prompts the use of IOC. The process is similar to type coercion⁹⁵ (Pustejovsky 1995), because the original noun is realised with an interpretative focus on one of its two conventionalised senses (i.e., collectivity of persons rather than inanimate location).

According to this analysis, a coherent interpretation of the relationship between an Argument Structure Construction and a verb entails that a distinction be made between the level of lexicon and grammar, with their encoded meanings, and the level of ‘normal language use’, with its inferred senses. With regard to the datasets, this distinction corresponds to the differentiation between the constructional configuration (the grammatical ‘construction’ in the most schematic sense of the term corresponding to an encoded linguistic content) and its two conventionalised realisations on the basis of various trivalent verbs with their different denotational classes and senses and a host of correlative interacting morphosyntactic, and information-structural factors, which constitute the locus of the alternating constructions. Given this hierarchy of structures, I refer to IOC and POC in German as **allostructions**. This is a particularly convenient term recently introduced in Construction Grammar (Cappelle 2006; Perek 2015) to capture the relation between two alternating forms and a general construction that functions as an overarching form-meaning pairing. Cappelle (2006: 18) defines allostructions as “variant structural realisations of a construction that is partially underspecified”, similar to allophones, which represent different physical realisations of an underlying abstract phoneme (cf. Section 2.5). In this view, the corpus-based findings are phenomena that can be coherently explained if one assigns to the intermediary level of ‘normal language use’ its proper place in the analysis. The encoded meanings of the three-argument ATG Construction and the trivalent verbs *geben*, *schicken*, *senden* etc. are the prerequisite conditions and insofar “license” the IOC/POC alternation, but it is by charting their

⁹⁵ Note that the term ‘coercion’ can be used in a broad sense, so as to include instances such as *Mary believes the book* where the lexical item *book* as [INFO-PHYSOBJ] is coerced into one of its ‘senses’, or in a narrow sense, restricting coercion to instances of ‘minimal coercion’ as in *Mary believes John*, where John is coerced from the category individual to the category propositional content (“*what John says*”), cf. Willems and Coene (2003: 43).

dynamic and in large part conventionalised features in naturally occurring data that the complex functional interplay of IOC, POC and the individual verbs emerges.

Distinguishing the allostructions IOC and POC from the overarching ATG Construction on a hierarchical basis is moreover in agreement with the important issue, raised by Stefanowitsch (2011), that only configurations which possess unpredictable formal and semantic properties can strictly speaking be called ‘constructions’, mere frequency being no reliable criterion for constructionhood (cf. Goldberg 2006; 2019 for a different view). With regard to the alternation at hand, IOC and POC can both realise the general transfer meaning of a large number of three-place German verbs – hence nothing unpredictable. Moreover, the statistical analyses reveal that, in general, the realisation of either IOC or POC can be predicted with a high predictive accuracy. Conversely, the properties of the ATG Construction (viz. the underspecified form [Subjekt + Verb + Objekt₁ + Objekt₂], cf. Willems and Coene (2006: 264) with its general THEME-related transfer meaning) cannot be predicted solely on the basis of its parts, neither formally nor semantically. To illustrate: at the schematic level of the ATG Construction it is unpredictable which form (dative or PP) the second object will take, nor can it be predicted into which sense the general meaning will develop.

In contrast to mainstream CxG, I have drawn on the concept of **underspecification** in the analysis rather than adopting a prototype approach. The concept of underspecification is well-suited as a basis for accounting for the difference between construction and allostruction for two reasons. A prototype approach to meaning proved difficult to operationalise. As explained in Section 1.2.3, in approaches such as those of Goldberg (1995, 2006, 2019) and Newman (1996), which adopt a single-layered approach to meaning, the prototype is the most central representative of a category, to which, via polysemy links, the other lexical items are connected in a radial network. In line with Rosch’s (1975) conception of the most typical representative of a category, usually a very concrete realisation is chosen as the prototype because it has properties that are salient and relatively easy to conceptualise. One drawback of this approach with regard to the present study is that it conflicts with the data. In Section 6.2.1 it was shown that, e.g., only one third of the instantiations of the verb *geben* in IOC and POC manifests the concrete prototypical sense according to which an object is handed over to a person. This means that two thirds of the *geben*-instantiations would need to be explained by means of “extensions” (cf. Section 1.2.3), which would be a cumbersome and ultimately counterintuitive solution. Even an alternative interpretation of the concept of prototype, couched in a multi-layered approach to meaning in the spirit of Welke (2011) and Höllein (2019), according to which the prototype represents the “starting point of a chain of modifications” (cf. Section 1.2.6), turned out to be problematic. Welke’s processual conception of prototype which favours a “diachrony in the synchrony” (2011: 15) assigns to the prototype a number of properties that straddle the semantics/pragmatics interface. In Höllein’s analysis of Prepositional Phrases (cf. Section 1.2.6), the meaning of

the “prototypical” significative-semantic niche does not necessarily underpin other significative-semantic niches (Höllein 2019: 78). It is therefore unclear to what extent these latter niches share an underlying general meaning and whether niche meanings are defeasible or not, which is the criterion used in the present approach to distinguish encoded linguistic content from inferred linguistic content.

By contrast, in the present analysis both the verb and the constructeme are considered to be underspecified at the level of encoded linguistic content. The **verbs** have underspecified transfer meanings that were rendered, as meaning potentials, in the deliberately general contrasting terms ‘*geben-transfer*’, ‘*schicken-transfer*’, ‘*verleihen-transfer*’ etc. These unitary general meanings or “*einheitliche Kernbedeutungen der Valenzträger*” (Willems and Coene 2003: 44, 56) stand in semantic oppositions to each other. Similarly, **ASCs** are taken to be part of a “*Satzmusterparadigma*” (Willems and Coene 2003: 61; 2006), i.e., constructions between which semantic contrasts hold, similar to Goldberg’s (1995: 67, 74-81) inheritance links between contrasting constructions which she however defines by means of verb meanings. Thus, the VT concept of “*Satzbauplan*” and the CxG concept of construction are reconcilable. As a matter of fact, the concept of a verb being associated with a “*Satzbauplan*” by virtue of its valency and the fusion of an independent construction (with its argument roles) and a verb (with its participant roles) have much in common and are basically different means to describe the same phenomenon. Obviously, the verbs under study do not solely occur in the ATG Construction but they can also be used in other constructions. For instance, *geben* can also be used in the monotransitive construction, e.g., *Die Kuh gibt viel Milch* ‘The cow gives a lot of milk’ (cf. Ágel 2017: 484).

Moreover, as was explained in Chapter 3, the label ‘underspecified’ may also be applied to lexical items that instantiate one or the other argument role of the constructeme. Conversely, specification is normally attained in language use by pragmatic enrichment with contextual or encyclopaedic information in the ‘homing-in’ process. However, disambiguation is not always required: the possibility is left open that some of the lexical items remain underspecified (e.g. *Ministerium* ‘ministry’, *Stadt* ‘city’, *Zeitung* ‘newspaper’ etc.) in some of the realisations if it is not required by the context to be explicit, as was shown in Section 6.2.2. This is in line with findings reported by Frisson (2009: 117), who provides strong evidence in favour of an underspecification account by showing that initially certain features are not expressed when words with multiple semantically related interpretations are processed, cf. also experimental evidence regarding Ferreira and Patson’s (2007) ‘good enough’ representations.

In summary: the distinction I have emphasised between “*Bedeutung*” (“what X means”, significative semantics) and “*Bezeichnung*” (“what X designates”, denotative semantics) entails that equivalence between alternants can be accommodated as follows. Allostructions can be considered to be equivalent, because they refer to the same facts in the (interpretation of the) external world, i.e., the same ontological concept of transfer

(cf. Starke's (1969a: 65) "logisch-grammatische Funktion"). Moreover, in terms of significative semantics, IOC and POC are synonymous, because they share the unique encoded, indefeasible transfer meaning of the ATG from which they originate. It is in terms of denotative semantics that they differ. The difference is associated with various semantic, pragmatic and information-structural factors (cf. Starke's (1969a: 65) "kommunikativ-grammatische Funktion") identified in the corpus analyses: IOC and POC each have their specific form and preferences, i.e., are to a large extent associated with various predictors. Recall, e.g., that with the verb *geben*, POC is associated with collectivity and passive voice, whereas *schicken* in IOC is associated with individual, pronominal and given RECIPIENTS. With regard to the complex *-schicken* and *-senden* verbs, RECIPIENT pronominality is also strongly associated with IOC. With regard to the complex *-geben* verbs and the verb *verleihen*, Sense turns out to be an important predictor, underscoring the finding that the alternation is to be described in terms of denotative semantics: e.g., in the sense "abordnen" the verb *abgeben* mainly appears in IOC, whereas the sense "mitteilen" is associated with POC with that same verb. The CIT for *verleihen* underscores the same finding: whereas the sense "verschaffen" appears in IOC, the senses "auszeichnen" and "verborgen" have a preference for POC, especially with new or accessible RECIPIENTS and given or accessible THEMES.

In summary, certain senses tend to occur either in IOC or POC and hence are more strongly associated with one alternant rather than the other. However, it is clear that in German, Caused Possession is not the encoded meaning of the allostruction IOC, because the form IOC can be used to express other meanings as well, and Caused Possession can be expressed by other forms than IOC. Likewise, Caused Motion is a conventionalised sense of POC, but the form POC can be used to express other meanings as well, and Caused Motion can be expressed by other forms than POC. Hence, Caused Possession and Caused Motion are no meanings (G. "Bedeutungen") but conventionalised senses (G. "Bezeichnungen") of the alternants in German.

6.4 Limitations and recommendations

In my approach of the IOC/POC variation in German, I have strived for a descriptively adequate and empirically sustainable account of the ditransitive alternation in present-day German. However, my account has also encountered a number of limitations. First of all, it is necessary to investigate regional variation more thoroughly. In this study, only the variable Source was integrated into the statistical model. It refers to the country of origin of the selected sentences from DeReKo. However, it was explained that this variable

must be approached with caution, because the indication of the origin of the sentences is partially unreliable: in DeReKo it is not possible to determine whether the sentences actually originate from the country in which the newspaper is published or whether they were borrowed from a news agency located elsewhere. Distinguishing regional variation of the corpus data in a more reliable way would need much more detailed informations. The newspaper titles, book titles and geographical location of the sessions of the “Deutscher Bundestag” that DeReKo also provides, appeared to be too vague an indication of the regional origin of the sentences that constitute the datasets. Further research into the regional preferences for POC over IOC is therefore called for, especially in light of the well-established finding that the south of Germany uses more datives than the north, cf. Wegener (1985: 163), albeit about the relation between possessive genitives and datives, and one of the results of this study that associates IOC with a Swiss source (viz. it was found that Source is statistically significant in the *geben*, the complex *-geben*, complex *-schicken/senden*, and in the *ausleihen*, *verleihen*, *verkaufen* datasets, but not in the *schicken/senden* dataset).

In the present study I have only investigated written language. An investigation of the IOC/POC alternation in spoken German would be highly desirable, so as to cover the spectrum of language use more broadly. At the beginning of the research for this study, I conducted a preliminary survey of spoken sentences with the verb *geben* in IOC and POC in the DGD “Datenbank für Gesprochenes Deutsch” provided by IDS Mannheim. In the meantime, the database has been extended considerably and now consists of 34 corpora. At the time I did not find sufficient variation to compare the spoken data with those from the written language database. Interestingly, in the spoken language database “FOLK” that I consulted, *geben* was used in ditransitive sentences only to a very limited extent. It would be particularly interesting to carry out a separate study of spoken German based on data elicitation so as to collect more data directly from native speakers. Moreover, an analysis could also be made of how the alternating structures IOC and POC are used in communication situated in various kinds of media. New datasets could be composed of IOC or POC sentences, both in the spoken language of news reports on television or of videoclips on, e.g., YouTube, in written posts on social networking sites such as Facebook, in blog posts and on other websites. It might be the case that significant variation co-occurs with different media types and channels.

More research is definitely also needed with regard to the diachronic development of the IOC/POC alternation in German. Is it true that language users have preferred POC to IOC over time and can Starke’s (1969a: 32) (1970b) claim that language users strive for more explicitness and transparency in their speech (“Streben nach Verdeutlichung”) be linked to an empirically observable diachronic development? Or does diachronic data provide evidence for Matzel’s opposite view (1976: 182) that the replacement of a synthetic form such as a dative NP by an analytic form such as a Prepositional Phrase is in no way a “Streben nach Verdeutlichung” in terms of linguistic economy, but rather a

tendency that is only observable with certain verbs (cf. Matzel 1976: 172) and that for this reason should be investigated more thoroughly (Matzel 1976: 182). A diachronic study that charts the relative proportions between IOC and POC is needed to explore assertions such as these. In addition, it would be interesting to study whether preferences in constituent order developed from e.g., New High German to present-day German, and in particular whether IOC (R-T) and POC (T-R) have always been the patterns of preference, compare Van Damme et al. (2020), who investigate the ditransitive alternation with the transfer verb *verkaufen* and not only observe a gradual increase of the relative POC frequency, but also find that POC occurs with the stable constituent order POC (T-R) throughout the entire New High German period. Concerning IOC, they find that the initial preference for IOC (T-R) dwindles and is gradually replaced by more IOC (R-T). However, the authors do not account for the decrease over time of IOC, and the increase of POC, in terms of loss of case marking and still consider German to be a full-fledged case language.

The present study presents evidence from 17 trivalent verbs, but many more trivalent verbs occur in the ditransitive alternation. The alternation should also be investigated with other trivalent verbs and the reasons why so many trivalent verbs do not show the alternation or only alternate to a very limited extent should be examined. Moreover, a study of the divalent verbs that can be coerced into a ditransitive construction could shed light on the difference between RECIPIENTS and BENEFICIARIES. One of the questions is whether, or to what extent, the roles of BENEFICIARY and RECIPIENT actually “merge” when they seem to fill the GOAL slot of a ditransitive construction (cf. Willems 2020) and to what extent coercion plays a role in that process. This would also require an investigation of the alternative analysis according to which the BENEFICIARY adds an extra argument to the construction.

In this dissertation, I have made no judgements with regard to the cognitive representations of the constructeme and/or its allostructions, nor have I applied psychological tests to investigate their entrenchment level. Rather, an attempt is made to determine the status of the ditransitive construction in the German language system, and to chart how it is used in naturally occurring sentences, based on observations of data drawn from the DeReKo corpus of present-day German. The Three-Layer Approach connects the corpus findings with grammar by means of the intermediary level of ‘normal language use’. ‘Normal language use’ is the level in which conventionalised realisations of the language system are arranged as patterns of preference. It was previously explained that the Three-Layer Approach also begs for an underspecification account in the fashion of, e.g., Frisson (2009) at the level of encoded linguistic content. Specifically related to the ditransitive alternation, psycho-linguistic experiments such as eye-tracking could provide evidence for the way in which underspecified nouns occurring in the third slot of a ditransitive construction are processed. Frisson and Pickering (1999) already demonstrated that with polysemous nouns, different senses can be accessed immediately, which according to their analysis calls for a single underspecified

representation. This finding is especially useful to account for the alternating instances of the ditransitive construction with verbs such as *schicken* and *senden*, in the alternation between *an*-POC and IOC on the one hand and *zu*-POC and IOC on the other, but actual tests are needed to establish whether such processing features can also be experimentally proven.

Moreover, in the present study, syntactic priming was a phenomenon that was left undiscussed because it proved difficult, if not impossible, to annotate. However, structural preferences and verb bias effects also have an influence on the ditransitive alternation, as is, e.g., shown by Kholodova and Allen (In press). They investigate ditransitive structures with six German verbs (*bringen* ‘bring’, *geben* ‘give’, *reichen* ‘hand’, *schicken* ‘send’, *verkaufen* ‘sell’, and *zeigen* ‘show’) by performing sentence completion tasks and acceptability judgement tasks. Their psycho-linguistic study could be extended to including complex trivalent verbs and a broader range of THEMES.

Chapter 7 Summary and conclusions

The goal of this dissertation was to investigate the ditransitive alternation in present-day German with a selection of non-complex and complex trivalent transfer verbs. Although much research has been done into alternating constructions in a number of different languages, a large-scale corpus study of German has so far been lacking. In German, the ditransitive alternation concerns two constructional variants, in the present study termed Indirect Object Construction (IOC) and Prepositional Object Construction (POC) for the sake of convenience.⁹⁶ Apart from the transfer verb, the ditransitive construction is characterised by three arguments: an AGENT-like, a THEME-like and a RECIPIENT-like argument. IOC, with the third argument realised in the dative, can alternate under certain conditions with POC, where the third argument is realised as a Prepositional Phrase (PP) instead of a dative NP. The PP can either be introduced by the preposition *an*, or, mainly confined to the verbs *schicken* and *senden*, by the preposition *zu*, in certain settings (e.g., with animate THEMES and animate RECIPIENTS). Other prepositions (e.g., *auf*, *in*, *nach*) occur in POC, with the PPs expressing DESTINATIONS. However, such sentences are excluded from the study because they do not alternate.

The dissertation is guided by three research questions. It explores in the first place the occurrence and extent of the constructional variation between the German structures IOC and POC by means of a corpus study based on approximately 7400 sentences collected from IDS Mannheim's DeReKo. The selected sentences stem from German, Austrian, Swiss and Wikipedia text sources from a period of time ranging from approximately 1985 to 2019. With regard to the verb *geben*, the study challenges the still dominant view that this verb does not partake in the IOC/POC alternation. Second, in three case studies, the morphosyntactic, semantic, pragmatic and information-structural factors that are associated with the alternation are determined by means of statistical analyses. Third, the theoretical implications ensuing from the findings are spelled out in a framework that

⁹⁶ Recall that, throughout this dissertation, the abbreviation IOC was used for the Dative Indirect Object Construction (DIOC) and POC for the Prepositional Indirect Object Construction (PIOC), both with indirective alignment.

relates the alternation to the difference between code and inference and the distinction between semantics and pragmatics. In this chapter, I will first provide a summary of the dissertation and then turn to the conclusions.

The dissertation investigates the ditransitive alternation with a selection of present-day German verbs of transfer by means of a corpus study. In order to achieve that goal, the dissertation was divided into seven chapters. Chapter 1 starts with an overview of previous research into syntactic alternations, given the fact that alternating constructions have been the subject of many studies and have been conducted with regard to many different languages. Six different lines of research are explored, which also informs the aim to develop a suitable theoretical framework that can cover all the German data collected for the study. First, attention is paid to older research of German from the seventies and eighties. Studies of Starke (1969-1970), Matzel (1976) and Wegener (1985) are scrutinised, with special attention to their claims regarding the motivation and emergence of “competing constructions”. Starke identifies the dative NP in IOC as “Zuwendgröße”, a non-spatial target that is conceived of as a person, whereas the *an*-PP is mostly a directional phrase, but he acknowledges that *an*-PPs can also be realised as ADDRESSEES. Starke and Matzel not only discuss differences in constituent order associated with IOC and POC but also investigate whether or not there is a growing tendency for more POC, which they link to a desire for more transparency in speech. Starke also addresses the difference between *an*-POC and *zu*-POC. Wegener’s work is a comprehensive study of the dative case in German in which she also discusses, albeit not as a central subject of study, trivalent verbs that have the capacity to occur with either a dative or a PP. She attributes to the PP a series of syntactic advantages and argues that the German language is in a restructuring process in which case forms are being replaced by PPs. She pays close attention to the semantic properties of the dative case and also to constituent order.

Because Valency Theory has played a major role in German linguistics in the 20th century and beyond, the findings that emerged from this tradition are subsequently discussed to some extent, with a focus not only on valency dictionaries, but also on the Duden grammar, which has traditionally adhered to Valency Theory. Under a Valency Approach the verb is considered as the central element in the sentence, capable of projecting an argument structure pattern, which in German linguistics is traditionally called a “Satzbauplan”. The “Satzbauplan” has certain parallels with the modern notion of ‘construction’, which is the central object of study in the Constructionist Approach. Because Valency Theory focuses on the verb and regards the arguments as projections of the verb by virtue of its valency, it is a projectionist approach to (alternating) argument structures.

Considering that Construction Grammar has put different alternations in English into the spotlight, some attention is also paid to the (seemingly) corresponding so-called

‘dative alternation’ in English. A number of interesting points of discussion are touched upon in this field of research, in particular regarding the guiding principles and the definition of the terminology used to describe the alternation in relevant literature. Typically, under a Constructionist Approach, the structures under study here are considered two constructions in their own right. The different senses of the form-meaning pairings are organised according to a radial network that revolves around a central ‘prototypical’ sense, which, typical of a Cognitive Approach, is the most concrete sense in which an AGENT successfully causes a RECIPIENT to receive a PATIENT. Polysemy links are invoked to link the different senses to the central sense. Other relevant links are metaphorical extensions, e.g., when the form of the Caused Motion Construction is used to express the meaning of the Ditransitive Construction, resulting in a Transfer Caused Motion Construction. Cappelle (2006) and Perek (2015), who both adhere to the basic assumptions of the Constructionist Approach, present an alternative analysis of syntactic alternations. Following Cappelle, who argues in favour of so-called ‘allostructions’ in particle placement alternations, Perek proposes allostructions for the ‘dative alternation’ as well. He proposes to adopt one overarching constructeme with the meaning ‘X CAUSE Y TO HAVE Z’ that encompasses both the Double Object Construction and the *to*-dative Construction in English.

Whereas Construction Grammar prioritises the construction, verb-centered approaches emphasise the role of the verb in alternating constructions. Proponents of the Verb Sensitive Approach (e.g., Rappaport-Hovav and Levin 2008) maintain that, apart from syntactic and discourse structure requirements, the alternation is predominantly sensitive to the semantics of the verb (and its Direct Object). In an analysis of the German alternation according to the Verb Sensitive Approach, Adler (2011) identifies five verb classes (the *geben*, *verkaufen*, *schicken*, *werfen*, and *stehlen* class) that behave differently in the alternation.

The Probabilistic Approach of e.g., Bresnan (2007) investigates how the alternation can be predicted based on several statistically significant factors, some of them pertaining to the effect of Harmonic Alignment of the arguments. Although the Probabilistic Approach can also be considered as a theoretical framework, in this study it is primarily used as a method of inquiry and a tool to study the regularities of the German alternation. The Probabilistic Approach is couched in a usage-based approach to language, in which, among other things, the preferences of the language users and the frequency of occurrence of certain structures play a predominant role. By contrast, the approach chosen for this dissertation is corpus-based and aims to connect the empirical findings to the distinction between semantics and pragmatics.

Finally, several Integrative Approaches are outlined in Chapter 1. Most Integrative Approaches not only strive towards a unification of Construction Grammar and Valency Theory principles (e.g., Willems and Coene 2003; Stefanowitsch 2011), which is the stance taken for the present study as well, but some also integrate the view that qualitative

differences in meaning should be taken into account, stressing the importance of the distinction between significative and denotative semantics (Welke 2011; Höllein 2019), “Bedeutung” and “Bezeichnung” and the interaction between encoded meaning and inferred meaning (Coene and Willems 2006; Willems and Coene 2006; Belligh and Willems 2021) and the ensuing differentiation between *meaning* and *sense*. The focus of attention of some of these approaches is the semantics/pragmatics interface and the position of both verb meaning and construction meaning with regard to this distinction. With this distinction in mind, Willems and Coene (2003) argue that the meanings of constructions are no lexical meanings and hence should not be rendered in terms of meanings of lexical items. They instead posit “Satzmusterbedeutungen” which are conceived of as language-specific encoded grammatical meanings, whereas the descriptions commonly used as paraphrases of constructional meanings commonly rely on lexical semantics and encyclopaedic knowledge (designation) at the level of pragmatics. However, some of these realisations can be conventionalised and be part of ‘normal language use’. Concerning the verb, Willems and Coene (2006) and Coene and Willems (2006) maintain that verbs have general lexical meanings at the semantic level, which are however pragmatically enriched in language use. At the same time, they accept the central role of the verb in the realisation of argument structure constructions.

In a similar vein, Ágel and Fischer (2010) argue that the verb determines its “Umgebung” ‘environment’, but that verbs in turn are also determined by their “Umgebung”, thus opening up Valency Theory for concepts developed outside the framework. Stefanowitsch (2011), too, wishes to combine both the constructionist and the projectionist view and introduces the term ‘lexically-bound Argument Structure Construction’ for a low level schema in which the verb has not been abstracted away from a particular verb yet. A lexically-bound Argument Structure Construction can be inserted into a higher level Argument Structure Construction that is more abstract. However, Stefanowitsch’s approach does not make a principled distinction between semantics and pragmatics.

Welke (2011) maintains that verb and construction are interconnected and, more specifically, that verbs contain information about possible constructions they can occur in. Unlike Stefanowitsch, he assumes qualitatively different levels of meaning and distinguishes significative semantics from denotative semantics. While significative semantics refers to encoded linguistic content, denotative semantics is meant to capture the various uses of the encoded linguistic content in discourse. However, Welke occasionally takes a hybrid stance with respect to significative semantics. A token of this is Welke’s view that pragmatic information may be included in significative semantics. Höllein (2019) expands on some of the views advanced by Welke and adopts three hierarchical levels with regard to linguistic content, in line with the theory of meaning elaborated by Coseriu (1970). Höllein’s significative-semantic “Nischebedeutungen” are conceived of as genuine “Satzbauplanzeichen”, i.e., form-meaning pairings in their own

right according to the Construction Grammar definition. His approach is moreover based on Welke's prototype semantics and consequently also assumes "diachrony in synchrony", i.e., the prototype is said to function as "der Ausgangspunkt einer Kette von Abwandlungen" 'the starting point of a chain of (semantic) developments' (Welke 2011: 14). Höllein's "Nischebedeutungen" straddle the semantic and the pragmatic level and not all the niches he adopts for German represent encoded meaning in the same way.

To conclude the section on Integrative Approaches, I briefly turn to Welke (2019). The book is geared at describing the interaction between construction and projection, albeit based on introspection. Although the author's aim is to elucidate a "Konstruktionsgrammatik des Deutschen", he also advocates a distinction between linguistic knowledge and encyclopaedic knowledge and investigates how projections can change, how new projections can originate and how coercions arise. Welke (2019) concludes that projections arise from constructions and not vice versa.

To conclude Chapter 1, a brief explanation is provided of how the present study aims to contribute to an Integrative Approach of the IOC/POC alternation. As well as treating 'construction' and 'verb valency' on an equal footing, special attention is paid to the distinction between encoded meaning and inferred meaning. The distinction also takes into account that discourse-specific enrichments of encoded meaning can to some extent be grouped together into clusters of conventionalised senses. The empirical study of the three-place verbs in the ditransitive alternation between IOC and POC in German adopts the methodology of the Probabilistic Approach. This means that the likelihood of the two structures can be predicted by means of statistical analyses. In this way, the significant factors that are associated with the alternation can be identified. However, in addition to the Probabilistic Approach, the variables that will be annotated and the factors that will be identified as significant will be dealt with in such a way as to be amenable to an analysis in terms of the semantics/pragmatics distinction.

Chapter 2 clarifies the terminology that is used in the dissertation. From the study of previous research it emerges that not all the terms used to describe the ditransitive alternation cover the same phenomena. Typologically speaking, the English 'dative alternation' differs from the German ditransitive alternation because the two languages have different alignment patterns: the Double Object Construction (DOC) and POC in the English alternation belong to two different alignment patterns, whereas the German IOC and POC have the same pattern of indirective alignment. Both alternations are thus not identical. Whereas DOC and POC in English can be considered two constructions in their own right because of their apparent formal differences, the typological finding that in German IOC and POC have the same alignment pattern points in another direction. The shared alignment pattern makes it plausible that German IOC and POC in fact have an overarching construction in common, and that it is this common construction (or 'constructeme') that can be considered as a construction in its own right. Furthermore,

the divergence in alignment patterns between English and German provides an indication that each alternation should be studied in its own right.

Therefore, the next section of Chapter 2 is devoted to the locus of the alternation in German. It is investigated whether the IOC/POC alternation must be considered as a phenomenon related to only the two alternating arguments (dative NP vs. PP), as merely a semantic difference between the verbs that are inserted into the construction, or as the result of two different constructions that fuse with specific groups of verbs. Two allocation problems are encountered concerning the German verbs under study. First, there is no consensus as to the question in which verb class the verb *schicken* belongs. Some accounts range it under the ‘verbs of giving’, “Besitzwechsel” ‘change of possession’, whereas other accounts characterise it as a typical directional verb, “Richtungsverb”, that belongs to the class of ‘verbs of sending’. Second, certain complex verbs can be categorised in two or more different verb groups, depending on their multiple senses. This finding suggests that the alternation cannot solely be explained as a difference in the semantics of verb classes. Subsequently, it is argued that the patterns under study are not dependent on diathesis, and that passive and active structures can be studied as realisations of one and the same underlying structure. After that, the term ditransitive is delineated with regard to German. Under a Constructional Approach, the Ditransitive Construction is confined to DOC, but in German, in order to comply with typological observations, the ditransitive construction includes both IOC and POC. Following Stefanowitsch, the term ‘construction’ is used according to its narrow definition, because the criteria of “sufficient frequency” and “cognitive entrenchment” are not considered sufficiently substantial to be used as defining features of a ‘construction’. Subsequently Cappelle and Perek’s terms ‘allostruction’ and ‘constructeme’ are introduced and defined. Chapter 2 ends with a description of constituent order in IOC and POC in German, given that German is a case language and has no rigid but a fairly variable constituent order. More specifically, the order of THEME vs. RECIPIENT is investigated, with a focus on the factors that are said to affect it.

Chapter 3 elaborates on the theoretical background which distinguishes this dissertation from other approaches that study alternations. In this dissertation, the Integrative Approach in which Valency Theory and Construction Grammar are integrated, is complemented by a layered approach to meaning (‘Three-Layer Approach’) in which the difference between encoded meanings, conventionalised senses and specific readings in particular discourse contexts is observed. When the difference between encoded linguistic content and inferred linguistic content is aligned with the distinction between semantics and pragmatics and their interface, it is possible to posit constructions that differ in schematicity or degrees of abstraction. Moreover, the Three-Layer Approach enables me to situate the findings that result from the statistical analyses of the data on qualitatively different levels of meaning. The threefold distinction is made

between encoded language facts that are infeasible on the one hand, regularities in language use that emerge on the intermediary level of ‘normal language use’ and one-off realisations. Whereas it is customary in Cognitive Approaches to language to mingle encoded meaning in the language system with “facts of the world” and encyclopaedic knowledge, the approach in this dissertation aims to tell apart encoded meaning from inferred meaning with regard to both verb meaning and constructional meaning and “Bedeutung” from “Bezeichnung”.

Chapter 4 begins with a description of the data collection process. The degree of ditransitivity of the noncomplex verbs *geben*, *schicken* and *senden* and of the complex verbs that alternate sufficiently to be amenable to a quantitative analysis (and thus qualify for further investigation) is determined by means of random samples. The process results in five datasets: the *geben* dataset, the *schicken* and *senden* dataset, the complex *-geben* dataset, the complex *-schicken/senden* dataset and the *ausleihen*, *verleihen*, *verkaufen* dataset. The guiding criteria for inclusion in and exclusion from the dataset are described. There is a considerable difference between the *geben* and the *schicken/senden* dataset because for the former, many idiomatic expressions that do not show any alternation had to be excluded, whereas the verbs *schicken* and *senden* are not often found to appear in idioms but in turn rather show a preference for directional uses. With regard to the complex verbs, the data are resampled in order to obtain a reasonably balanced dataset that represents the actual proportions IOC/POC in a reliable way so as to make comparisons between the verbs possible.

In the next section, the 27 predictors that are used in the analysis are described and examples are provided. The annotated factors are partly inspired by the factors pertaining to THEME and RECIPIENT used by Bresnan et al. (2007), but more factors, also pertaining to the AGENT and the verb, are added. Lastly, the steps in the statistical modelling are described in detail.

Chapter 5 is made up of the actual three case studies. The first two case studies have been published in *Corpus Linguistics and Linguistic Theory* (2018) and *Language Sciences* (2021), respectively. Each case study focuses on the distribution of the alternation in the corpus data, constituent order, and the results of the statistical analysis. With regard to the *geben* dataset, it is found that, contrary to a common assertion in previous research, *an*-POC occurs in approximately 5% of the ditransitive cases, even though IOC is the pattern of preference with this verb. Two constituent orders stand out: IOC (R-T) and POC (T-R), the two other constituent orders occur infrequently. The logistic regression model indicates the significance of 13 predictors. Most of the predictors are related to the THEME and the RECIPIENT and suggest that Harmonic Alignment might play a role in the alternation with *geben*, i.e., that animate, definite, given, pronominal and short constituents tend to precede inanimate, indefinite, new, nominal and longer

constituents. However, the analysis also indicates that the factors Denotational Class, Animacy of AGENT, Voice and Source also have a bearing on the alternation. These are factors that do not pertain to Harmonic Alignment. Apart from the factors that predict Harmonic Alignment, POC is mainly associated with concrete Denotational Class, passive Voice, collectivity of AGENT and RECIPIENT and German Source (as distinguished from Swiss, Austrian and Wikipedia sources).

The distribution of IOC vs. POC in the *schicken/senden* dataset turns out to be completely different as compared to the *geben* dataset. If the POC attestations that are directional and non-alternating are excluded and only the ditransitive uses are counted, POC is still the preferred alternant, especially with *senden*. Constituent order with *schicken* features slightly more IOC (T-R) order than with *geben* and *senden*, POC (R-T) is marginally used with both verbs. The statistical analysis reveals that nine factors are significant. Some of them, such as Animacy, Pronominality and Givenness of RECIPIENT and Length Difference, still indicate that Harmonic Alignment might be a guiding principle for the alternation, but also Syncretism and Propernounhood of RECIPIENT contribute to the alternation, which again does not comply with Harmonic Alignment. The factor Sense is also found to be significant. Especially the senses C “object”, E “religious”, F “meteorological” and G “financial” are positively associated with IOC. Moreover, a significant difference between *schicken* and *senden* is found. The finding that the verb *senden* is associated with POC, whereas *schicken* comparatively tends more towards IOC, is reason to conduct a Conditional Inference Tree analysis of each verb separately. Conditional Inference Trees determine the main predictors of the alternation by indicating splitting points. Both Conditional Inference Trees indicate Pronominality of RECIPIENT as the main predictor for the alternation, followed by Animacy of RECIPIENT. Whereas Animacy of THEME is significant with regard to *schicken*, with regard to *senden* it is Animacy of AGENT. The importance of Animacy of THEME for *schicken* can be related to the instantiations of zu-POC in which persons are sent to persons, which is found to be the most prominent use of zu-POC, a use that alternates only to a lesser extent with IOC.

The occurrence of the alternation differs considerably with the 14 complex verbs under study. Whereas certain verbs such as *übergeben*, *übersenden* and *verleihen* show a preference for ditransitive constellations, other verbs, such as *zurückschicken*, *abgeben* and *einschicken* are mainly found in monotransitive sentences. The constituent order in the complex -*geben* dataset reveals that, especially with *preisgeben*, *übergeben* and *zurückgeben*, IOC (T-R) is quite frequent, whereas POC (R-T) is a negligible constituent order, comparable to what was found with noncomplex *geben*. The ANOVA for the complex -*geben* verbs provides seven significant factors. Strikingly, Source and Verb are the strongest predictors for the alternation with these verbs. Most other significant factors can again be associated with Harmonic Alignment. Swiss texts tend to have IOC more often than POC. RECIPIENTS that are proper nouns are associated with POC throughout the dataset. Sense was treated as a random effect because there was insufficient variability. The best

linear unbiased predictions (BLUPs) of the random effects of Sense show that certain senses preferably occur in either IOC or POC, confirming the hypothesis that not only certain verbs and their encoded *meaning* may be associated more with a certain alternant than with the other, but that Sense too may be, in combination with other factors, a factor that affects the realisation of either of the alternants. Separate Conditional Inference Trees for the complex *-geben* verbs corroborate the importance of the factor Sense. It is the main predictor for *abgeben* and *preisgeben*. Regarding the verb *abgeben*, the sense “abordnen” is associated with POC, e.g., *Aufgaben an ambulante Hilfsdienste abgeben* ‘delegate tasks to external services’, whereas the sense “mitteilen” with singular RECIPIENTS is associated with IOC, e.g., *dem Fakultätsrat eine Empfehlung abgeben* ‘make a recommendation to the faculty board’. With regard to the verb *preisgeben*, the sense “überlassen” is associated with IOC, e.g., *die UdSSR der Lächerlichkeit preisgeben* ‘hold up the USSR to ridicule’, whereas the sense “verraten” shows more POC, e.g., *Details an Journalisten preisgeben* ‘disclose details to journalists’. The factor Sense occurs as the second splitting point in the Conditional Inference Tree for *übergeben*. With *übergeben* the alternation primarily pivots on RECIPIENT Propernounhood. For instance, when the RECIPIENT is a common noun, IOC is the absolutely preferred alternant for the senses “ausliefern” and “freigeben”, and also, but to a slightly lesser extent, for the senses “aushändigen” and “anvertrauen”, e.g., *den Bauern prächtiges Vieh übergeben* ‘consign magnificent cattle to the farmers’. With a proper noun and an individual AGENT, *übergeben* is associated with POC, e.g., *Ludwig Angeli übergab den Award an Ralf Zacherl* ‘Ludwig Angeli presented the Award to Ralf Zacherl’. *Zurückgeben* has Denotational Class as the main predictor of the alternation, and abstract denotational class is associated with IOC, e.g., *dem Amt ein Stück Sicherheit zurückgeben* ‘give the function back some certainty’. The confusion matrix for *weitergeben* only predicts POC, which coincides with the finding that *weitergeben* most frequently occurs in POC.

In the dataset of the complex *-schicken/send* verbs the previous findings regarding the more liberal IOC constituent order with regard to THEME and RECIPIENT are confirmed. For instance, *übersenden* shows a considerable number of IOC (T-R) attestations despite being mainly attested in IOC (R-T) constituent order. POC (R-T) is again a marginal constituent order. Seven factors are significant, with Verb and Source again standing out as the main predictors. Apart from Pronominality and Animacy of RECIPIENT, which are to be expected as predictors of the IOC/POC alternation based on the previous analyses, also Syncretism, Propernounhood and Number of RECIPIENT have predictive qualities. The effects point in the same direction as for the complex *-geben* verbs. In the Conditional Inference Trees for each verb apart, Pronominality of RECIPIENT is the main predictor for all the complex *-schicken/send* verbs, associating IOC with pronominality.

Finally, in the *ausleihen, verleihen, verkaufen* dataset no new observations pertaining to constituent order emerge. The statistical analysis reveals that there are 12 significant factors, of which Verb and Source again stand out, apart from the factors that

traditionally relate to Harmonic Alignment. However, other properties than those pertaining to Harmonic Alignment also emerge for the RECIPIENT: its propernounhood, syncretism, person and number all have a bearing on the alternation. The Conditional Inference Trees for the individual verbs *ausleihen*, *verleihen* and *verkaufen* differ from each other: whereas for *ausleihen* Pronominality of RECIPIENT is the main predictor, the Conditional Inference Tree for *verleihen* shows Sense, and the Conditional Inference Tree for *verkaufen* Givenness of RECIPIENT as main predictors. This again indicates that not only Harmonic Alignment, but also other factors such as Sense affect the alternation.

Chapter 6 is devoted to the discussion of the motivating factors, the scope of the constructional variation and the theoretical implications of the analysis. The limitations of the study are also discussed and some recommendations for further research are given. First, a summary is provided of the significant factors associated with IOC and POC. It is argued that the alternation is not solely driven by Harmonic Alignment principles, because many other factors that do not pertain to THEME or RECIPIENT are also found to be statistically significant in the models. It is argued that the pervasive importance of the factor Verb in the statistical analyses demonstrates the need to analyse the ditransitive alternation on a case-to-case basis. The realisation of IOC compared to POC differs considerably depending on the verb that is inserted into the construction. Therefore an analysis in terms of general verb classes based on observed regularities of different verbs is considered less preferable with respect to the analysis of the German data. Moreover, the importance of the factors Denotational Class and Sense reveals that the alternation in German has to be situated on the level of ‘normal language use’. Neither IOC nor POC can be considered to be encoded Argument Structure Constructions in the grammar of German, with ‘construction’ understood as a form/meaning pairing according to the narrow sense of the definition. Some assumptions put forward in previous research regarding the allegedly greater transparency of POC are confirmed by the significance of factors such as Propernounhood and Syncretism of RECIPIENT.

In the second section, the scope of the constructional variation is discussed. The occurrence of the IOC/POC alternation with the three verb groups (*geben*; *schicken*/*senden* and the complex verbs treated as a single group) is subsequently considered in greater detail and the findings of previous research are checked with regard to the findings of the present study. To begin with, Adler’s (2011) observation that *geben* only expresses Caused Possession and does not occur in *an*-POC is countered and it is shown that the ‘root’ meaning of *geben* is more general than the alleged Caused Possession meaning proposed by Adler. Even if ‘possession’ is interpreted in its broadest sense, this study shows that not all instantiations with *geben* can be said to be possessional. Therefore a more general, underspecified transfer verb meaning is called for in order to accommodate the data. Rappaport-Hovav and Levin’s (2008) definition of the ‘root’ meaning as “the core meaning [...] which encodes those meaning components entailed in all uses of the verb, regardless

of context” is found to be perfectly suitable to define the underspecified meaning that I use as a starting point for the empirical analyses. By the same token, Caused Possession should be conceived of as a conventionalised sense of the verb in language use, next to other senses that the general underspecified meaning can give rise to when it is inserted into a construction and combined with lexical material. Unlike the analysis of ‘give’ verbs in Construction Grammar (Goldberg 1995) or Newman’s (1996) analysis of ‘give’, the present analysis does not start with a (concrete) prototypical sense in combination with polysemous extensions, but assumes a single general (monosemous) meaning at the level of encoded linguistic content. The polysemy observed with *geben* emerges at the level of ‘normal language use’ and is thus a matter of pragmatic enrichment.

The verbs *schicken* and *senden* are found to behave differently in the alternation, considering that they occur far more frequently in POC than *geben*. Still, although *schicken* and *senden* seem to be semantically synonymous, they also differ regarding the frequency of use of POC. Instead of attributing a Caused Motion meaning to *schicken*, and having to admit that the verb can also express Caused Possession (cf. Adler 2011), I propose an analysis in which the ‘root’ meaning is again more general in terms of semantics and Caused Motion and Caused Possession are conceptualised as inferred senses in terms of pragmatics. For the third argument of the general construction that occurs with trivalent verbs, the semantic role GOAL appears to best accommodate the data. With *schicken/senden* the RECIPIENT-like denotational role is realised as an ADDRESSEE, which is a specific instantiation of the GOAL role, because it entails both reception and direction and describes best the sometimes somewhat ambiguous realisations of the third argument when it occurs with these verbs. The ambiguity stems from the fact that certain realisations can simultaneously express that the THEME is sent to the RECIPIENT who/that is situated at a certain location and that the RECIPIENT also receives the THEME.

Subsequently, the difference between *an*-POC and *zu*-POC observed with *schicken* and *senden* is accounted for. IOC competes with *zu*-POC (but not with *an*-POC) when the THEME is animate. Inanimate THEMES allow for IOC, *an*-POC and *zu*-POC. The combination animate THEME – animate RECIPIENT is almost exclusively realised in *zu*-POC. The preposition *zu* is in the first place a directional preposition but it is possible to add the implicature that the GOAL role is a RECIPIENT-like argument. By contrast, the preposition *an* is a rather ‘empty’ preposition compared to *zu*, its primary function being to provide for a PP that is an alternative to the dative NP. The conclusion that the IOC/*zu*-POC alternation is based on an implicature, corroborates the previous analysis that the alternation takes place on the level of ‘normal language use’ and that neither IOC nor POC are encoded in the grammar of German.

Next, the occurrence of the alternation with the 14 complex verbs considered as one group is discussed. Reference is made to a claim already made by Wegener (1985) and Welke (1989) who argue that the alternation with complex verbs depends on the prefix of the verbs. Wegener’s (1985) assumptions can be refuted by DeReKo searches, Welke’s

(1989) claim is partially correct, but only if it is approached on a case-by-case basis. Welke associates prefixing with valency reduction because the prefix adds a semantic enrichment to the verb, so that one of the complements no longer needs to be expressed, according to Welke. If it is expressed, it gets the status of a facultative rather than an obligatory complement and it is preferably realised as a PP. In addition, Adler's (2011) account of the verb *verkaufen* is considered in more detail and contrasted with an analysis that starts from an underspecified verb meaning.

Finally, the theoretical implications of the findings are spelled out. It is argued that for an adequate description of the conditions under which the IOC/POC alternation takes place, a distinction between the encoded formal and semantic properties of the construction and what is inferred is necessary. When the data is considered on the semantics/pragmatics interface and from the point of view of a Three-Layer Approach to meaning, it is possible to provide a satisfactory, coherent account of the ditransitive alternation in present-day German. In such an account, neither IOC nor POC are form-meaning pairings in their own right ('constructions' according to the narrow definition) in the grammar of German: IOC is not dedicated to expressing Caused Possession, the dative can also be e.g., a BENEFICIARY or an EXTERNAL POSSESSOR. Although POC is the preferred form to express Caused Motion, it does not encode Caused Motion as a form-meaning pairing, because POC can also be used to express other meanings and other means of transfer, such as e.g., Caused Possession. Moreover, in present-day German, Caused Possession and Caused Motion are also expressed by other morphosyntactic structures. Therefore, in accordance with accounts by Cappelle (2006) and Perek (2015), IOC and POC are considered as 'allostructions' of a more general, underspecified 'constructeme' that is termed AGENT-THEME-GOAL Construction (ATG Construction), based on the interplay of the verbal transfer meaning and the three semantic roles (viz. encoded roles of the Argument Structure Construction in the grammar). The GOAL argument can be realised either as a dative NP or as a PP with *an* (or *zu*, in certain well-defined and delimited cases). Both the constructeme and the verb are considered to have an underspecified *meaning* that is indefeasible and hence can be found in each and every instantiation of the construction. These instantiations, on the other hand, provide the pragmatic enrichments that occur when the constructeme is filled with lexical material. Along with this instantiation, several significant factors pertaining not only to THEME and RECIPIENT, but also to AGENT and the verb, contribute to the difference between IOC and POC. IOC and POC are therefore not considered to be constructions in the narrow sense of the term but partly conventionalised instantiations of the overarching AGENT-THEME-GOAL constructeme. IOC and POC are moreover shown to partly converge with conventionalised senses which are commonly identified as Caused Possession and Caused Motion.

In conclusion, the investigation of the ditransitive alternation in present-day German by means of a corpus study of 7400 sentences from German, Swiss, Austrian and Wikipedia

sources has brought to light that the alternation is affected by the complex interplay of a wide array of statistically significant factors. Some of the predictors of the alternation suggest that the alternation takes place according to principles of Harmonic Alignment, but the statistical analyses also indicate that more and other predictors bear on the alternation. More specifically, the predictors Verb, Denotational Class and Sense indicate that the instantiation of either IOC or POC is to a high degree verb-dependent and affected by the three denotational classes (viz. concrete, abstract, propositional) and the various senses associated with each individual verb.

One major conclusion following from the investigation is therefore that IOC and POC are not two encoded constructions that are identifiable as two form-meaning pairings in their own right in the grammar of German, but rather allostructions with specific ‘pragmatic’ properties of a more general encoded constructeme that can be accounted for in terms of ‘semantics’ proper. Regarding the issues concerning its linguistic content, the German IOC/POC alternation is consequently accounted for, in the present investigation, according to a three-levelled approach to meaning, with the intermediary level of ‘normal language use’ taking pride of place in the analysis. It was found that at this level certain combinations of factors have a strong influence on the realisation of the third or GOAL argument of the constructeme. Under the influence of the interplay of the typical predictors, the GOAL argument is either realised in the dative case or as a Prepositional Phrase, instantiating the form IOC or POC, respectively. Importantly, both the verb and the construction contribute to the alternation in equal measure, with their underspecified encoded transfer meaning and their underspecified “Satzmusterbedeutung”, respectively. The latter is general to the extent that it is not expressed in terms of a ‘lexical description’ but of a constructional meaning in its own right, viz. AGENT-THEME-GOAL transfer. It was also shown that an account of the alternation with respect to the intermediary level of ‘normal language use’ aligns well with the theory of Generalised Conversational Implicatures, which corroborates the conclusion neither IOC nor POC are encoded construction in the German language.

A general conclusion is that an Integrative Approach, which pays due attention to both constructionist and projectionist principles in combination with a layered approach to linguistic meaning on the semantics/pragmatics interface, is able to contribute to a better understanding of the ditransitive alternation in present-day German. In the present study, this has only been possible on the basis of a corpus-based methodology that has provided the study with the necessary empirical data. The study thus brings together different strands of linguistic research which are not normally combined in current accounts of alternating argument structures.

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Appendices

Statistical models

A The *geben* model of 05/03/2020

Logistic Regression Model

```
lrm(formula = Cx ~ Source + Voice + DenoClass + AgentAnim + ThemePron +
    ThemeGiv + ThemeAnim + ThemeDef + ThemeConc + ThemeLogDice +
    RecPron + RecGiv + RecAnim + RecDef + RecConc + RecPerson +
    RecSync + RecNum + RecProperNoun + rcs(LengthDiff), data = geben,
    x = TRUE, y = TRUE)
```

	Coef	S.E.	wald z	Pr(> z)
Intercept	-0.7648	1.8394	-0.42	0.6776
Source=CH	-0.2273	0.4610	-0.49	0.6219
Source=D	0.8313	0.2935	2.83	0.0046
Source=W	11.7088	25.1764	0.47	0.6419
Voice=passive	1.8606	0.7528	2.47	0.0135
DenoClass=concrete	1.4212	0.4998	2.84	0.0045
DenoClass=propositional	-0.6647	0.8110	-0.82	0.4124
AgentAnim=indv	-0.9280	0.2570	-3.61	0.0003
AgentAnim=ninf	-1.1719	0.6817	-1.72	0.0856
AgentAnim=innm	-1.4013	0.4914	-2.85	0.0044
ThemePron=pronominal	1.2623	0.5639	2.24	0.0252
ThemeGiv=acc	0.0731	0.2914	0.25	0.8020
ThemeGiv=new	-0.9215	0.2580	-3.57	0.0004
ThemeAnim=innm	-0.5958	0.9265	-0.64	0.5202
ThemeDef=indefinite	-0.0194	0.2235	-0.09	0.9309
ThemeConc=concrete	2.7617	0.5379	5.13	<0.0001
ThemeConc=propositional	4.7346	0.8627	5.49	<0.0001
ThemeLogDice=high	-0.2407	0.3966	-0.61	0.5440
ThemeLogDice=low	0.2034	0.2272	0.90	0.3705
RecPron=pronominal	-1.2641	0.4415	-2.86	0.0042
RecGiv=acc	1.2954	0.2864	4.52	<0.0001
RecGiv=new	1.5646	0.2514	6.22	<0.0001
RecAnim=indv	-1.6745	0.2733	-6.13	<0.0001
RecAnim=undr	0.7654	0.3129	2.45	0.0144
RecAnim=innm	-2.4706	0.4267	-5.79	<0.0001
RecDef=indefinite	0.3958	0.3363	1.18	0.2392
RecConc=concrete	0.6283	1.2229	0.51	0.6074
RecConc=propositional	-6.4368	89.0751	-0.07	0.9424
RecPerson=nonlocal	-2.2548	0.6674	-3.38	0.0007
RecSync=nonexplicit	-0.9877	0.5665	-1.74	0.0812
RecNum=singular	0.2587	0.2520	1.03	0.3047
RecProperNoun=propernoun	-0.7663	0.3582	-2.14	0.0324
LengthDiff	0.1726	0.0811	2.13	0.0334
LengthDiff'	0.2224	0.2241	0.99	0.3209

LengthDiff''	-10.4822	4.4451	-2.36	0.0184
LengthDiff'''	36.7681	14.6214	2.51	0.0119

Bootstrap validation (2000 samples)

	index.orig	training	test	optimism	index.corrected	n
Dxy	0.9202	0.9282	0.9115	0.0167	0.9035	2000
R2	0.7790	0.7930	0.7625	0.0305	0.7485	2000
Intercept	0.0000	0.0000	0.0185	-0.0185	0.0185	2000
Slope	1.0000	1.0000	0.8807	0.1193	0.8807	2000
E _{max}	0.0000	0.0000	0.0313	0.0313	0.0313	2000
D	0.8737	0.8993	0.8446	0.0547	0.8190	2000
U	-0.0015	-0.0015	0.0044	-0.0059	0.0044	2000
Q	0.8752	0.9008	0.8403	0.0606	0.8146	2000
B	0.0793	0.0746	0.0838	-0.0092	0.0885	2000
g	5.4768	5.9277	5.2083	0.7194	4.7575	2000
gp	0.4577	0.4611	0.4529	0.0082	0.4494	2000

Variance Inflation Factors

	[,1]
Source=CH	1.560331
Source=D	1.526533
Source=W	1.000442
Voice=passive	3.646451
DenoClass=concrete	6.096867
DenoClass=propositional	17.098476
AgentAnim=indv	1.595417
AgentAnim=ninf	3.861331
AgentAnim=innm	1.348983
ThemePron=pronominal	1.202175
ThemeGiv=acc	1.558420
ThemeGiv=new	1.730747
ThemeAnim=innm	1.070696
ThemeDef=indefinite	1.240919
ThemeConc=concrete	7.312292
ThemeConc=propositional	19.285340
ThemeLogDice=high	1.207919
ThemeLogDice=low	1.327812
RecPron=pronominal	2.152594
RecGiv=acc	1.268014
RecGiv=new	1.436703
RecAnim=indv	1.935872
RecAnim=undr	1.419345
RecAnim=innm	1.564722
RecDef=indefinite	1.271807
RecConc=concrete	1.154905
RecConc=propositional	1.000178
RecPerson=nonlocal	2.424666
RecSync=nonexplicit	1.881080
RecNum=singular	1.351649
RecProperNoun=propernoun	1.267671
LengthDiff	10.642122
LengthDiff'	132.191115
LengthDiff''	822.586758
LengthDiff'''	440.638640

B. The *schicken/senden* model of 10/03/2020

Logistic Regression Model

```
lrm(formula = Cx ~ Verb * ThemeLogDice + Sense + Source + Voice +
    DenoClass + AgentAnim + ThemePron + ThemeGiv + ThemeAnim +
    ThemeDef + ThemeConc + ThemeLogDice + RecPron + RecGiv +
    RecAnim + RecDef + RecPerson + RecSync + RecNum + RecProperNoun +
    rcs(LengthDiff), data = ss, x = TRUE, y = TRUE, penalty = p$penalty)
```

	Coef	S.E.	wald	Z	Pr(> Z)	PenaltyScale
Intercept	0.8914	1.3058	0.68	0.4948	0.0000	
Verb=senden	1.4514	0.2402	6.04	<0.0001	0.6164	
ThemeLogDice=high	0.1904	0.2395	0.80	0.4266	0.7118	
ThemeLogDice=low	-0.0554	0.2227	-0.25	0.8036	0.7118	
Sense=B	-0.1792	0.2259	-0.79	0.4277	0.8219	
Sense=C	-0.7945	0.4863	-1.63	0.1023	0.8219	
Sense=D	0.0274	0.7973	0.03	0.9726	0.8219	
Sense=E	-1.7991	0.7640	-2.35	0.0185	0.8219	
Sense=F	-2.8800	0.9825	-2.93	0.0034	0.8219	
Sense=G	-1.5167	0.6403	-2.37	0.0178	0.8219	
Sense=H	-0.7183	0.6721	-1.07	0.2852	0.8219	
Sense=I	-0.7656	0.6614	-1.16	0.2470	0.8219	
Source=CH	-0.1351	0.3066	-0.44	0.6594	0.7550	
Source=D	0.0382	0.2163	0.18	0.8597	0.7550	
Source=W	-0.1536	0.3445	-0.45	0.6557	0.7550	
Voice=passive	1.3884	0.4624	3.00	0.0027	0.6164	
DenoClass=concrete	0.4965	0.8637	0.57	0.5654	0.7118	
DenoClass=propositional	0.7505	0.8679	0.86	0.3872	0.7118	
AgentAnim=indv	0.1884	0.2090	0.90	0.3675	0.7550	
AgentAnim=ninf	0.0676	0.4165	0.16	0.8710	0.7550	
AgentAnim=innm	0.8397	0.4682	1.79	0.0729	0.7550	
ThemePron=pronominal	-0.1160	0.3189	-0.36	0.7160	0.6164	
ThemeGiv=acc	-0.4640	0.2289	-2.03	0.0426	0.7118	
ThemeGiv=new	-0.4675	0.2087	-2.24	0.0251	0.7118	
ThemeAnim=innm	-1.2243	0.7340	-1.67	0.0953	0.6164	
ThemeDef=indefinite	-0.3424	0.1821	-1.88	0.0600	0.6164	
ThemeConc=concrete	0.8396	0.5863	1.43	0.1521	0.7118	
ThemeConc=propositional	0.2345	0.5709	0.41	0.6812	0.7118	
RecPron=pronominal	-2.3226	0.2996	-7.75	<0.0001	0.6164	
RecGiv=acc	0.3528	0.2205	1.60	0.1096	0.7118	
RecGiv=new	0.9127	0.1890	4.83	<0.0001	0.7118	
RecAnim=indv	-0.9057	0.2285	-3.96	<0.0001	0.7550	
RecAnim=undr	1.0299	0.2810	3.67	0.0002	0.7550	
RecAnim=innm	1.1826	0.5587	2.12	0.0343	0.7550	
RecDef=indefinite	0.4080	0.2566	1.59	0.1119	0.6164	
RecPerson=nonlocal	0.4674	0.3924	1.19	0.2336	0.6164	
RecSync=nonexplicit	0.6232	0.2567	2.43	0.0152	0.6164	
RecNum=singular	-0.3000	0.1845	-1.63	0.1041	0.6164	
RecProperNoun=propernoun	0.5709	0.2470	2.31	0.0208	0.6164	
LengthDiff	0.1196	0.0363	3.30	0.0010	3.6492	
LengthDiff'	0.0828	0.1101	0.75	0.4521	3.7663	
LengthDiff''	-0.2731	1.7439	-0.16	0.8756	0.4304	
LengthDiff'''	-1.8370	3.6962	-0.50	0.6192	0.1780	
Verb=senden * ThemeLogDice=high	-0.3013	0.3934	-0.77	0.4438	0.3175	
Verb=senden * ThemeLogDice=low	-0.4788	0.4361	-1.10	0.2722	0.2138	

Bootstrap validation (2000 samples)

	index.orig	training	test	optimism	index.corrected	n
Dxy	0.8434	0.8557	0.8332	0.0225	0.8209	2000
R2	0.6452	0.6601	0.6359	0.0242	0.6210	2000
Intercept	0.0000	0.0000	0.0310	-0.0310	0.0310	2000
Slope	1.0000	1.0000	0.9546	0.0454	0.9546	2000
E _{max}	0.0000	0.0000	0.0156	0.0156	0.0156	2000
D	0.6134	0.6256	0.5942	0.0314	0.5819	2000
U	-0.0010	-0.0010	0.0006	-0.0017	0.0006	2000
Q	0.6144	0.6266	0.5935	0.0331	0.5813	2000
B	0.0906	0.0874	0.0935	-0.0061	0.0968	2000
g	2.8500	3.0080	2.8682	0.1397	2.7102	2000
gp	0.3534	0.3572	0.3528	0.0044	0.3490	2000

Variance Inflation Factors

	[,1]
Verb=senden	2.312766
ThemeLogDice=high	2.064998
ThemeLogDice=low	1.644353
Sense=B	1.250876
Sense=C	6.416509

Sense=D	8.601445
Sense=E	1.955718
Sense=F	1.224713
Sense=G	1.943286
Sense=H	1.849414
Sense=I	2.086576
Source=CH	1.601167
Source=D	1.862980
Source=W	1.433903
Voice=passive	2.234951
DenoClass=concrete	30.807795
DenoClass=propositional	31.453258
AgentAnim=indv	1.662842
AgentAnim=ninf	2.557037
AgentAnim=innm	1.512110
ThemePron=pronominal	1.476542
ThemeGiv=acc	1.764700
ThemeGiv=new	2.014597
ThemeAnim=innm	7.887499
ThemeDef=indefinite	1.409860
ThemeConc=concrete	14.845577
ThemeConc=propositional	14.367644
RecPron=pronominal	2.561933
RecGiv=acc	1.328437
RecGiv=new	1.498360
RecAnim=indv	2.056229
RecAnim=undr	1.703384
RecAnim=innm	1.418197
RecDef=indefinite	1.198155
RecPerson=nonlocal	2.718276
RecSync=nonexplicit	1.958773
RecNum=singular	1.465006
RecProperNoun=propernoun	1.696389
LengthDiff	3.929426
LengthDiff'	31.851547
LengthDiff''	99.609603
LengthDiff'''	76.051608
Verb=senden * ThemeLogDice=high	2.982130
Verb=senden * ThemeLogDice=low	1.849222

C. The complex *-geben* model of 10/03/2020

Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']

Family: binomial (logit)

Formula: Cx ~ Verb + ThemeLogDice + Source + Voice + DenoClass + LengthDiff +

AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
ThemeConc + RecPron + RecGiv + RecAnim + RecDef + RecConc +
RecPerson + RecSync + RecNum + RecProperNoun + (1 | Sense)

Data: gcomp

Control: glmerControl(optimizer = "bobyqa", optCtrl = list(maxfun = 2e+05))

AIC	BIC	logLik	deviance	df.resid
680.8	853.9	-303.4	606.8	759

Scaled residuals:

Min	1Q	Median	3Q	Max
-4.3775	-0.3775	0.0911	0.4071	4.7184

Random effects:

Groups	Name	Variance	Std.Dev.
Sense	(Intercept)	0.7941	0.8911

Number of obs: 796, groups: Sense, 19

Fixed effects:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	0.62953	1.73411	0.363	0.716585	
Verbprsg	-3.85795	1.03256	-3.736	0.000187	***
Verbübrg	-2.41034	0.57775	-4.172	3.02e-05	***
Verbwtrg	0.77337	0.78237	0.988	0.322913	
Verbzrck	-2.03673	0.99188	-2.053	0.040034	*
ThemeLogDicehigh	0.17449	0.30418	0.574	0.566217	
ThemeLogDicelow	0.47889	0.31728	1.509	0.131211	
SourceCH	-1.61967	0.37410	-4.330	1.49e-05	***
SourceD	0.10816	0.31617	0.342	0.732290	
SourceW	-1.34917	1.66425	-0.811	0.417551	
Voicepassive	0.55876	0.80163	0.697	0.485782	
DenoClassconcrete	0.64033	0.44581	1.436	0.150912	
DenoClasspropositional	0.30322	0.95748	0.317	0.751482	
LengthDiff	0.03422	0.03268	1.047	0.295092	
AgentAnimindv	-0.48371	0.33052	-1.463	0.143333	
AgentAnimninf	-0.63678	0.81157	-0.785	0.432677	
AgentAniminnm	-1.77114	0.85367	-2.075	0.038011	*
ThemePronpronominal	-0.99631	0.37078	-2.687	0.007208	**
ThemeGivacc	0.48422	0.30693	1.578	0.114653	
ThemeGivnew	-0.46466	0.27733	-1.675	0.093843	.
ThemeAniminnm	0.76427	0.58086	1.316	0.188250	
ThemeDefindefinite	-0.46898	0.24479	-1.916	0.055383	.
ThemeConcconcrete	-0.13111	0.43296	-0.303	0.762032	
ThemeConcpropositional	0.91473	0.99641	0.918	0.358607	
RecPronpronominal	-1.61733	0.58945	-2.744	0.006073	**
RecGivacc	-0.21581	0.32651	-0.661	0.508648	
RecGivnew	0.49933	0.27203	1.836	0.066426	.
RecAniminnm	-1.42987	0.68291	-2.094	0.036278	*
RecAnimindv	0.06681	0.30692	0.218	0.827668	
RecAnimindr	0.26649	0.38231	0.697	0.485762	
RecDefindefinite	0.59394	0.38515	1.542	0.123046	
RecConcconcrete	-0.14591	0.65479	-0.223	0.823663	
RecPersonnonlocal	0.97948	1.42131	0.689	0.490738	
RecSynconexplicit	0.27929	0.38740	0.721	0.470956	
RecNumsingular	-0.42614	0.28412	-1.500	0.133644	
RecProperNounpropernoun	0.85588	0.33584	2.548	0.010821	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

ANOVA table

Single term deletions

Model:

Cx ~ Verb + ThemeLogDice + Source + Voice + DenoClass + LengthDiff +
AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
ThemeConc + RecPron + RecGiv + RecAnim + RecDef + RecConc +
RecPerson + RecSync + RecNum + RecProperNoun + (1 | Sense)

	Df	AIC	LRT	Pr(Chi)	
<none>		680.75			
Verb	4	696.77	24.024	7.901e-05	***
ThemeLogDice	2	679.10	2.345	0.309634	
Source	3	718.18	43.434	1.990e-09	***
Voice	1	679.24	0.494	0.482033	
DenoClass	2	678.79	2.042	0.360223	
LengthDiff	1	679.85	1.099	0.294480	
AgentAnim	3	680.14	5.388	0.145468	
ThemePron	1	686.20	7.450	0.006344	**
ThemeGiv	2	686.31	9.555	0.008419	**
ThemeAnim	1	680.47	1.719	0.189782	
ThemeDef	1	682.40	3.647	0.056162	.
ThemeConc	2	677.91	1.159	0.560117	
RecPron	1	687.22	8.468	0.003614	**
RecGiv	2	683.67	6.919	0.031439	*
RecAnim	3	681.09	6.339	0.096243	.
RecDef	1	681.14	2.392	0.121973	

RecConc	1	678.80	0.049	0.825366
RecPerson	1	679.27	0.523	0.469588
RecSync	1	679.27	0.519	0.471266
RecNum	1	680.99	2.237	0.134737
RecProperNoun	1	685.30	6.553	0.010469 *

 signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Variance Inflation Factors

	[,1]
Verbprsg	1.346475
Verbübrg	1.454016
Verbwtrg	1.387684
Verbzrck	1.277802
ThemeLogDicehigh	1.204460
ThemeLogDicelow	1.175924
SourceCH	2.060993
SourceD	2.065079
SourceW	1.084447
Voicepassive	10.534310
DenoClassconcrete	3.553259
DenoClasspropositional	8.988876
LengthDiff	1.177023
AgentAnimindv	2.269743
AgentAnimininf	11.364379
AgentAniminnm	1.208388
ThemePronpronominal	1.187318
ThemeGivacc	1.420017
ThemeGivnew	1.545180
ThemeAniminnm	1.100139
ThemeDefindefinite	1.220688
ThemeConcconcrete	3.510029
ThemeConcpropositional	9.229816
RecPronpronominal	1.403924
RecGivacc	1.555173
RecGivnew	1.650352
RecAniminnm	1.254991
RecAnimindv	1.998723
RecAnimundr	1.581803
RecDefindefinite	1.279104
RecConcconcrete	1.346972
RecPersonnonlocal	1.397100
RecSyncnonexplicit	1.538996
RecNumsingular	1.469719
RecProperNounpropernoun	1.678912

D. The complex -schicken/sendern model of 11/03/2020

Logistic Regression Model

```
lrm(formula = Cx ~ Verb + ThemeLogDice + Source + Voice + DenoClass +
  AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
  ThemeConc + ThemeLogDice + RecPron + RecGiv + RecAnim + RecDef +
  RecPerson + RecSync + RecNum + RecProperNoun + rcs(LengthDiff),
  data = sscomp, x = TRUE, y = TRUE, penalty = p$penalty)
```

	Coef	S.E.	Wald Z	Pr(> Z)	Penalty	Scale
Intercept	3.0540	1.4254	2.14	0.0321	0.0000	
Verb=ensn	0.7444	0.3635	2.05	0.0406	1.2179	
Verb=übr	-2.1563	0.3435	-6.28	<0.0001	1.2179	
Verb=wtr	1.0836	0.4446	2.44	0.0148	1.2179	
Verb=zrcksc	-0.0151	0.3247	-0.05	0.9628	1.2179	
Verb=zrcksn	0.3586	0.3384	1.06	0.2894	1.2179	
ThemeLogDice=high	0.7085	0.6111	1.16	0.2463	1.0893	
ThemeLogDice=low	-0.1969	0.2381	-0.83	0.4083	1.0893	

Source=CH	-1.1177	0.3635	-3.07	0.0021	1.1554
Source=D	-0.2733	0.3062	-0.89	0.3722	1.1554
Source=W	0.1873	0.6626	0.28	0.7775	1.1554
Voice=passive	-0.4945	0.4431	-1.12	0.2644	0.9434
DenoClass=concrete	-0.2803	0.7756	-0.36	0.7178	1.0893
DenoClass=propositional	0.1622	0.7776	0.21	0.8347	1.0893
AgentAnim=indv	-0.4359	0.2829	-1.54	0.1233	1.1554
AgentAnim=ninf	0.1839	0.4677	0.39	0.6942	1.1554
AgentAnim=innm	0.5061	0.7394	0.68	0.4936	1.1554
ThemePron=pronominal	0.2604	0.2840	0.92	0.3592	0.9434
ThemeGiv=acc	-0.1303	0.2482	-0.52	0.5998	1.0893
ThemeGiv=new	-0.4397	0.2498	-1.76	0.0783	1.0893
ThemeAnim=innm	-0.1679	0.7265	-0.23	0.8173	0.9434
ThemeDef=indefinite	-0.1802	0.2142	-0.84	0.4001	0.9434
ThemeConc=concrete	0.4802	0.6914	0.69	0.4873	1.0893
ThemeConc=propositional	0.1757	0.6800	0.26	0.7961	1.0893
RecPron=pronominal	-2.2897	0.3479	-6.58	<0.0001	0.9434
RecGiv=acc	0.0365	0.3033	0.12	0.9042	1.0893
RecGiv=new	0.3044	0.2377	1.28	0.2004	1.0893
RecAnim=indv	-0.3116	0.2693	-1.16	0.2472	1.1554
RecAnim=undr	0.3210	0.2776	1.16	0.2475	1.1554
RecAnim=innm	0.6316	0.7193	0.88	0.3799	1.1554
RecDef=indefinite	0.2367	0.3885	0.61	0.5424	0.9434
RecPerson=nonlocal	0.0335	0.3973	0.08	0.9328	0.9434
RecSync=nonexplicit	-1.0609	0.3349	-3.17	0.0015	0.9434
RecNum=singular	-0.5368	0.2469	-2.17	0.0297	0.9434
RecProperNoun=propernoun	0.6287	0.2867	2.19	0.0283	0.9434
LengthDiff	0.0619	0.0416	1.49	0.1367	5.2685
LengthDiff'	-0.0832	0.1100	-0.76	0.4495	5.1127
LengthDiff''	0.2249	1.4906	0.15	0.8801	0.5135
LengthDiff'''	-0.1421	3.4153	-0.04	0.9668	0.2038

Bootstrap validation (2000 samples)

	index.orig	training	test	optimism	index.corrected	n
Dxy	0.7718	0.7945	0.7534	0.0411	0.7307	2000
R2	0.4985	0.5230	0.4986	0.0244	0.4741	2000
Intercept	0.0000	0.0000	-0.0025	0.0025	-0.0025	2000
Slope	1.0000	1.0000	1.0070	-0.0070	1.0070	2000
Emax	0.0000	0.0000	0.0019	0.0019	0.0019	2000
D	0.4272	0.4307	0.4054	0.0253	0.4019	2000
U	-0.0019	-0.0019	-0.0002	-0.0017	-0.0002	2000
Q	0.4291	0.4326	0.4055	0.0270	0.4020	2000
B	0.1034	0.0986	0.1071	-0.0085	0.1118	2000
g	1.9864	2.1231	2.1315	-0.0084	1.9948	2000
gp	0.2736	0.2796	0.2802	-0.0006	0.2742	2000

Variance Inflation Factors

	[,1]
Verb=ensn	1.594122
Verb=übr	2.815827
Verb=wtr	1.536058
Verb=zccksc	2.232751
Verb=zccksn	2.499412
ThemeLogDice=high	1.046370
ThemeLogDice=low	1.166662
Source=CH	2.301619
Source=D	2.357575
Source=W	1.159549
Voice=passive	4.973925
DenoClass=concrete	17.056823
DenoClass=propositional	17.249405
AgentAnim=indv	2.475467
AgentAnim=ninf	5.832661
AgentAnim=innm	1.126276
ThemePron=pronominal	1.431409
ThemeGiv=acc	1.416222
ThemeGiv=new	1.528537
ThemeAnim=innm	1.032299
ThemeDef=indefinite	1.212290

ThemeConc=concrete	14.378901
ThemeConc=propositional	13.999828
RecPron=pronominal	2.762706
RecGiv=acc	1.332052
RecGiv=new	1.680382
RecAnim=indv	2.253405
RecAnim=undr	1.933804
RecAnim=innm	1.102680
RecDef=indefinite	1.149881
RecPerson=nonlocal	2.525068
RecSync=nonexplicit	1.619114
RecNum=singular	1.579733
RecProperNoun=propernoun	1.230508
LengthDiff	3.285056
LengthDiff'	20.709926
LengthDiff''	37.360723
LengthDiff'''	30.707878

E. The *ausleihen, verleihen, verkaufen* model of 11/03/2020

Logistic Regression Model

```
lrm(formula = Cx ~ Verb * ThemeLogDice + Source + Voice + DenoClass +
  AgentAnim + ThemePron + ThemeGiv + ThemeAnim + ThemeDef +
  ThemeConc + ThemeLogDice + RecPron + RecGiv + RecAnim + RecDef +
  RecPerson + RecConc + RecSync + RecNum + RecProperNoun +
  rcs(LengthDiff), data = comp, x = TRUE, y = TRUE, penalty = p$penalty)
```

	coef	S.E.	wald Z	Pr(> Z)	PenaltyScale
Intercept	2.5776	2.2849	1.13	0.2593	0.0000
Verb=verkaufen	2.2270	1.0625	2.10	0.0361	0.5292
Verb=verleihen	-1.1986	1.0362	-1.16	0.2474	0.5292
ThemeLogDice=low	-1.2815	1.0192	-1.26	0.2086	0.5292
ThemeLogDice=no	-0.8908	0.9801	-0.91	0.3634	0.5292
Source=CH	-2.8824	0.6495	-4.44	<0.0001	0.5612
Source=D	-1.4389	0.4775	-3.01	0.0026	0.5612
Source=W	-1.5526	1.1252	-1.38	0.1676	0.5612
Voice=passive	-0.1259	0.8475	-0.15	0.8819	0.4583
DenoClass=concrete	0.5531	0.7740	0.71	0.4748	0.5292
DenoClass=propositional	-1.6648	1.1787	-1.41	0.1578	0.5292
AgentAnim=indv	-1.2936	0.3735	-3.46	0.0005	0.5612
AgentAnim=innm	-1.9993	0.9726	-2.06	0.0398	0.5612
AgentAnim=ninf	0.3710	0.8699	0.43	0.6697	0.5612
ThemePron=pronominal	-0.6863	0.4505	-1.52	0.1277	0.4583
ThemeGiv=given	1.4635	0.4075	3.59	0.0003	0.5292
ThemeGiv=new	0.0124	0.4153	0.03	0.9762	0.5292
ThemeAnim=innm	-1.5455	0.5427	-2.85	0.0044	0.4583
ThemeDef=indefinite	-0.6167	0.3493	-1.77	0.0775	0.4583
ThemeConc=concrete	0.5606	0.7724	0.73	0.4680	0.5292
ThemeConc=propositional	0.6729	1.1854	0.57	0.5703	0.5292
RecPron=pronominal	-0.9721	0.5125	-1.90	0.0579	0.4583
RecGiv=given	0.4282	0.5443	0.79	0.4315	0.5292
RecGiv=new	1.9566	0.4910	3.99	<0.0001	0.5292
RecAnim=indv	-0.8805	0.4559	-1.93	0.0534	0.5612
RecAnim=innm	-1.8243	0.9338	-1.95	0.0507	0.5612
RecAnim=undr	0.6059	0.5500	1.10	0.2706	0.5612
RecDef=indefinite	1.0536	0.4104	2.57	0.0103	0.4583
RecPerson=nonlocal	-1.2890	0.5768	-2.23	0.0254	0.4583
RecConc=concrete	1.1152	1.6376	0.68	0.4959	0.5292
RecConc=propositional	0.1567	1.8991	0.08	0.9343	0.5292
RecSync=nonexplicit	-3.6344	1.0526	-3.45	0.0006	0.4583
RecNum=singular	-1.0282	0.3480	-2.95	0.0031	0.4583
RecProperNoun=propernoun	1.7883	0.4316	4.14	<0.0001	0.4583
LengthDiff	0.1121	0.0899	1.25	0.2122	2.3938
LengthDiff'	-0.2097	0.2705	-0.78	0.4382	2.3475
LengthDiff''	0.2973	1.8483	0.16	0.8722	0.4248
LengthDiff'''	1.9343	3.9560	0.49	0.6249	0.1749
Verb=verkaufen*ThemeLogDice=low	0.3040	1.1971	0.25	0.7995	0.1685

Verb=verleihen * ThemeLogDice=low	1.0204	1.2733	0.80	0.4229	0.1660
Verb=verkaufen * ThemeLogDice=no	-0.6474	1.1023	-0.59	0.5570	0.2834
Verb=verleihen * ThemeLogDice=no	0.6626	1.1158	0.59	0.5526	0.2265

Bootstrap validation (2000 samples)

	index.orig	training	test	optimism	index.corrected	n
Dxy	0.9606	0.9692	0.9520	0.0173	0.9433	2000
R2	0.8484	0.8654	0.8406	0.0247	0.8237	2000
Intercept	0.0000	0.0000	0.0148	-0.0148	0.0148	2000
Slope	1.0000	1.0000	0.9357	0.0643	0.9357	2000
Emax	0.0000	0.0000	0.0172	0.0172	0.0172	2000
D	1.0278	1.0444	0.9933	0.0511	0.9767	2000
U	-0.0023	-0.0023	0.0012	-0.0035	0.0012	2000
Q	1.0300	1.0467	0.9921	0.0546	0.9755	2000
B	0.0535	0.0462	0.0580	-0.0118	0.0653	2000
g	5.4068	5.9249	5.5264	0.3985	5.0083	2000
gp	0.4757	0.4785	0.4760	0.0025	0.4732	2000

Variance Inflation Factors

	[,1]
Verb=verkaufen	14.736773
Verb=verleihen	11.369494
ThemeLogDice=low	9.126795
ThemeLogDice=no	12.153896
Source=CH	2.309995
Source=D	2.152630
Source=W	1.171570
Voice=passive	6.678873
DenoClass=concrete	3.425649
DenoClass=propositional	3.106354
AgentAnim=indv	1.841258
AgentAnim=innm	1.199529
AgentAnim=ninf	7.112663
ThemePron=pronominal	1.536763
ThemeGiv=given	2.174064
ThemeGiv=new	2.027276
ThemeAnim=innm	1.689692
ThemeDef=indefinite	1.356505
ThemeConc=concrete	3.147864
ThemeConc=propositional	3.146306
RecPron=pronominal	2.573595
RecGiv=given	3.804185
RecGiv=new	3.180989
RecAnim=indv	2.272524
RecAnim=innm	1.449042
RecAnim=undr	1.730306
RecDef=indefinite	1.526617
RecPerson=nonlocal	1.613240
RecConc=concrete	1.505718
RecConc=propositional	1.399062
RecSync=nonexplicit	1.032766
RecNum=singular	1.406715
RecProperNoun=propernoun	1.732240
LengthDiff	5.589165
LengthDiff'	51.950338
LengthDiff''	81.381580
LengthDiff'''	63.835641
Verb=verkaufen * ThemeLogDice=low	7.021486
Verb=verleihen * ThemeLogDice=low	3.316119
Verb=verkaufen * ThemeLogDice=no	15.191948
Verb=verleihen * ThemeLogDice=no	6.331353

Additional examples

Sentence patterns with *geben* in present-day German and their frequencies

Sentence patterns with IOC. (Note: Because the analysis bears on ditransitive *geben*, monotransitive uses were excluded from the dataset.)

Cx and Word Order	Sentence pattern	N	Example
IOC REC-THEME	SUBJECT – V – IO – DO	243	Deutsche Eltern geben <ihren Kindern> immer häufiger [biblische Namen]. (Neue Kronen-Zeitung, 25.02.1996)
	SUBJECT – IO – DO – V	247	Der Erfolg wird <der deutschen Liga> [einen Riesen-Aufschwung] geben. (Mannheimer Morgen, 06.02.2007) Und weiß, wie dieses Detail, an der richtigen Stelle platziert, <einer Geschichte> [den entscheidenden Dreh] geben kann. (Hannoversche Allgemeine, 18.12.2007) Damit wollte die Regierung <der angeschlagenen heimischen Stahlindustrie> [Zeit zur Konsolidierung] geben. (Mannheimer Morgen, 06.12.2003)
	V – SUBJECT – IO – DO	52	Im Laufe der Auseinandersetzung gab er <dem Mannheimer> [einen Kopfstoß] wobei dieser sich einen Nasenbeinbruch zuzog. (Mannheimer Morgen, 19.01.2011)
	V – IO – SUBJECT – DO	2	Wenn Sie heute Kirchen ausmalen, geben <Ihnen> dann die Gemeinden [Vorgaben]? (Rhein-Zeitung, 03.04.1999)
	IO – V – SUBJECT – DO	4	<Einem entsprechenden Gesetz> gab der Bundesrat gestern ebenfalls [seine Zustimmung]. (Mannheimer Morgen, 21.12.1985)
	IO – SUBJECT – DO – V	7	<Ihren Angehörigen> konnte sie mit einem Brief vom 23. April 1943 [ein letztes Lebenszeichen] geben. (Frankfurter Rundschau, 12.03.1998)
	Zero subject – IO – DO – V	69	Das Komitee tritt auch dafür ein, <dem Parlament> [mehr Macht] zu geben. (Die Presse, 17.02.1993)
	V – IO – DO	7	Gib <mir> [die Brieftasche]! (Neue Kronen-Zeitung, 09.06.1996)

	IO – DO – V (passive)	49	Hier wird <den Schülern> [die Gelegenheit] gegeben, [[mit Zeitzeugen zu diskutieren]]. (Mannheimer Morgen, 04.05.2004)
		680	
IOC THEME- REC	SUBJECT – V – DO – IO	7	Der Direktor der Nahrungs- und Landwirtschaftsorganisation der Uno (FAO) hatte tags zuvor in Paris [die Schuld an der Krise] <einer verfehlten Politik in den vergangenen 20 Jahren> gegeben. (Neue Zürcher Zeitung, 25.04.2008)
	SUBJECT – DO – IO – V	3	Allein in Neef haben wir 15 Prozent verloren, weil die Wähler [ihre Stimmen] lieber <den Liberalen> gaben. (Rhein-Zeitung, 25.03.1996)
	V – SUBJECT – DO – IO	2	Den Erlös wollten wir spenden, und da in Holzheim aktuell nichts anstand, geben wir [das Geld] nun <dem Kindergarten>", erzählt Björn Fetter. (Rhein-Zeitung, 08.12.2005)
	DO – V – SUBJECT – IO	6	[Schuld] geben die Wissenschaftler <der Beschleunigung unseres Lebens im digitalen Zeitalter>. (Nürnberger Zeitung, 03.05.2007)
	DO – IO – SUBJECT – V	1	[Ihr Interesse für Mode], so Annkathrin Bauhofer, habe <ihr> die Mutter mit auf den Weg gegeben. (Neue Zürcher Zeitung, 02.02.2013)
	DO – SUBJECT – IO – V	5	[Das Mobiltelefon] soll die 16-Jährige <dem Angeklagten> gegeben haben, der das Handy weiterverkaufen sollte. (Braunschweiger Zeitung, 06.02.2013)
	DO – V – IO – SUBJECT	4	[Seinen Namen] gaben <ihm> die Beginen, eine Gemeinschaft alleinstehender Frauen, die fromm, sittsam und bescheiden lebten. (Hannoversche Allgemeine, 03.11.2012)
	DO – IO – V (passive)	4	[Die Waffe] war <dem Buben> von den Eltern gegeben worden, um seine drei Brüder zu schützen. (Die Presse, 22.07.1994)
	TOTAL:	32	

Sentence patterns with POC

Cx and Word Order	Sentence pattern	N	Example
POC REC- THEME	V – SUBJECT – IO – DO	1	Bei dem Song "The Girl From Ipanema" gab Gitarrist Hugo Fuchs <an das Publikum> [die Empfehlung: "Stellen Sie sich vor, Sie wären in der Karibik am Strand mit einem kühlen Cocktail in der Hand"]. (Mannheimer Morgen, 16.06.2005)
	TOTAL:	1	
POC THEME- REC	SUBJECT – V – DO – IO	58	Zwei mit dem Schrittmacher verbundene Elektroden gaben damals [Stimulationsenergie] <an das völlig aus dem Takt geratene Herz eines Mannes, der in einer Not-OP unters Messer gekommen war>. (Mannheimer Morgen, 13.04.2012)

	SUBJECT –DO – IO – V	243	Auch die EU-Staaten mit Ausnahme Griechenlands wollen [keine Wiederaufbauhilfe] <an das Serbien von Milosevic> geben. (Kleine Zeitung, 02.07.1999) Trotz schwieriger Haushaltslage haben wir im Haushaltsausschuss [ein wichtiges Signal] <an das Technische Hilfswerk (THW) und seine ehrenamtlichen Helfer> gegeben. (Kleine Zeitung, 02.07.1999)
	SUBJECT – DO – IO – V	108	Ärzte sind ja oft froh und erleichtert, wenn sie [bestimmte Patienten] <an den Heilpraktiker> geben können. (Wikipedia, 2011)
	V – SUBJECT – DO – IO	24	Einmal gab er [seinen ganzen Monatslohn] <an das Schulgeld>. (St. Galler Tagblatt, 14.05.2009)
	DO – V – SUBJECT – IO	8	[So etwas] geben wir dann <an das Bundeskriminalamt>. (Braunschweiger Zeitung, 29.12.2009)
	DO – SUBJECT – IO – V	18	[Das Schreiben von Anwalt Klein] haben wir mit besonderem Hinweis auf die Frist <an das Ministerium> gegeben. (Kleine Zeitung, 02.09.1999)
	Zero subject - DO – IO – V	46	Der Minister mahnte alle Empfänger solcher Schreiben, [die Briefe] <an das Landeskriminalamt> zu geben. (Mannheimer Morgen, 31.08.2002)
	DO – IO – V (passive)	83	Das Gremium entscheidet – Einstimmigkeit vorausgesetzt – [welcher Auftrag] <an das Bildungsbüro> gegeben wird. (Mannheimer Morgen, 15.09.2009)
	TOTAL:	588	

POC examples for all the levels of the predictors chosen, with the observed sample probabilities

Note: the sample probabilities concern the separate *geben* study reported on in the CLLT article

Predictor	Level	N	% POC	Example and origin
Voice	active	1155	44%	Damit kann die Notenbank Dänemarks [zusätzliche Euro-Mittel] <an die Banken> geben. (Hannoversche Allgemeine, 28.10.2008)
	passive	113	74%	Das Gremium entscheidet – Einstimmigkeit vorausgesetzt – [welcher Auftrag] <an das Bildungsbüro> gegeben wird. (Mannheimer Morgen, 15.09.2009)
Agent	individual	664	47%	[Hinweise] können Zeugen per Telefon <an das Umweltamt> unter den Nummern (0 53 51) 121-2500, 121-2520 oder 121-2526 sowie an die Polizei Schöningen, (0 53 52) 95 10 50, geben. (Braunschweiger Zeitung, 31.07.2009)
	collective	281	60%	Das Insolvenzgericht in New York gab [grünes Licht für den rettenden Verkauf des US-Autoherstellers Chrysler] <an den italienischen Fiat-Konzern>. (Mannheimer Morgen, 02.06.2009)
	inanimate	169	8%	Der Körper gibt [Signale] <an den Kopf>, Erschöpfungssignale. (Nürnberger Nachrichten, 05.07.1999)

	not expressed	154	61%	[Meldungen] können bis 24. November <an Klaus-Dieter Kurze> per Fax gegeben werden. (Braunschweiger Zeitung, 06.11.2007)
Theme Pronominality	nominal	1224	45%	Achim Göckel gab vom Ufer aus schnell [Ruderanweisungen] <an das Damenboot> und verhinderte so eine Kollision. (Rhein-Zeitung, 06.09.2004)
	pronominal	44	84%	Der Kunsthändler Leo Castelli hatte 1961 das Bild "Electric Cord" von Roy Lichtenstein gekauft. Er gab [es] <an einen Restaurator, der es reinigen sollte – und "verlor">. (Mannheimer Morgen, 24.10.2012)
Theme Givenness	given	317	74%	Das 80 Seiten lange Dokument ist dem französischen Transportminister Jean-Claude Gayssot gestern überreicht worden. Der Ressortchef will [das Dokument] heute <an die Presse> geben und erläutern. (Mannheimer Morgen, 01.09.2000)
	accessible	224	58%	"Ich hatte gleich zu Anfang vier Rollen", erinnert sich Vaal Smeets an seine ersten Tage in der Gruppe. "Das macht Inge extra - immer gleich [die Hauptrolle] <an die Neuen> geben", juxta Timo Auer. (Rhein-Zeitung, 30.08.2004)
	new	727	31%	Clemente warf ihnen vor, [Informationen] <an den Gegner> gegeben zu haben. (Rhein-Zeitung, 13.06.1998)
Theme Animacy	animate	17	88%	Als sie auch am Folgetag nicht wegfliegen wollte, gaben wir [die Schöne] <an einen Taubenhalter im Dorf>. (Nürnberger Nachrichten, 20.07.2013)
	inanimate	1251	46 %	Der Ressortchef will [das Dokument] heute <an die Presse> geben und erläutern. (Mannheimer Morgen, 01.09.2000)
Theme Definiteness	definite	508	55 %	Er habe [das Bild] nie ernsthaft <an die Medien> geben wollen, sagt er. (Nürnberger Nachrichten, 10.03.2010)
	indefinite	760	41%	Wir wollen gleich [ein Signal] <an die Liga> geben. (Mannheimer Morgen, 15.01.2010)
Theme Concreteness	abstract	452	4 %	"Früher haben wir [die Ideen] entwickelt und <an eine Agentur> gegeben, dann haben wir denen die Texte geschrieben und die Bilder mit ausgesucht", sagt Dinstühler. (Nürnberger Zeitung, 29.01.2009)
	concrete	404	72%	114 Jahre später gibt sein Sohn Albert [das Bild] <an eine Koblenzer Zeitung>. (Rhein-Zeitung, 18.07.2002)
	propositional	412	68%	Die Idee ist nicht neu, aber die SPD hat jetzt [einen konkreten Auftrag] <an den Planungsausschuss> gegeben. (Rhein-Zeitung, 24.05.2005)
Rec Concreteness	abstract	42	7%	Sie finanziert Museen und gibt jährlich [bedeutende Beträge] <an das Kulturleben>. (St.Galler Tagblatt, 04.11.2000)
	concrete	1226	48%	König Ludwig der Bayer gab 1333 [die Kapelle] <an das Benediktinerkloster in Sinsheim>. (Wikipedia, 2011)
Rec Pronominality	nominal	1095	51%	Der DRK-Kreisverband ist der erste, der [diese Listen] <an eine öffentliche Bücherei> gegeben hat. (Rhein-Zeitung, 31.01.1997)

	pronominal	173	14%	Allerdings liegt dabei der Verdacht immer sehr nahe, dass diese durch einen illegalen Vorgang erworben worden ist, ansonsten würden die Banken [die Daten] selbst <an uns> geben. (Niedersachsen: Plenarprotokoll 16.11.2011)
Rec Givenness	given	608	31%	Doch wer sein Archiv im Mannheimer Forum Internationale Photographie besucht, (...) In nächster Zeit will Häusser auch [die Negative dieser Werke] <an das Archiv> geben – bisher sind hier nur die Abzüge zu finden. (Mannheimer Morgen, 16.02.2012)
	accessible	218	53%	Da helfe ich auch schon mal bei der Lese und gebe [die Trauben] <an eine Kellerei, die ein Fass mit hundert Litern für mich ansetzt>.” (Rhein-Zeitung, 06.10.2007)
	new	442	64%	Gleichzeitig will die Notenbank [billige Kredite] <an die Wirtschaft> geben. (Nürnberger Nachrichten, 18.12.2008)
Rec Animacy	individual	526	30%	Damit will man [ein Signal] <an die Richter> geben, nicht zu milde Urteile zu sprechen. (Rhein-Zeitung, 24.09.1996)
	collective	306	66%	“[Einen Teil] haben wir <an den Tansania-Verein> gegeben, der Rest geht ans Tierheim”, erläuterten die Lehrerinnen Margarete Fries und Lydia Grunbach die Verteilung. (Mannheimer Morgen, 24.05.2012)
	underspecified	285	77%	Der DRK-Kreisverband ist der erste, der [diese Listen] <an eine öffentliche Bücherei> gegeben hat. (Rhein-Zeitung, 31.01.1997)
	inanimate	151	7%	Der Spieler befestigte Elektroden sollen die Muskelbewegung der Augen messen, so dass gelähmte Menschen durch Wechseln der Blickrichtung [ihre Befehle] <an das Spiel> geben können. (Mannheimer Morgen, 29.09.2001)
Rec Definiteness	definite	1103	46%	Schön, daß bekannt wird, daß es dazu Gutachten gibt, die [klare Empfehlungen] <an die Stadt> geben. (Rhein-Zeitung, 13.03.1996)
	indefinite	165	48%	“Besser wäre gewesen, [das Material] sofort <an einen privaten Entsorger> zu geben.” (Mannheimer Morgen, 17.06.1999)
Rec Propernounhood	notproper	1145	44%	Er gibt lediglich [den Auftrag] zur Erarbeitung <an einen Dritten>. (Mannheimer Morgen, 12.09.2001)
	proper	123	64%	[Die Hälfte davon] geben sie <an das Jugendhaus Bertha>, den Rest investieren sie gleich in ihren nächsten Film. (Nürnberger Zeitung, 29.05.2006)
Idiom (only alternating idioms)	yes	12	17%	Das Insolvenzgericht in New York gab [grünes Licht für den rettenden Verkauf des US-Autoherstellers Chrysler] <an den italienischen Fiat-Konzern>. (Mannheimer Morgen, 02.06.2009)
	no	1256	47%	Die Koblenzer Staatsanwaltschaft habe [das Verfahren] <an das Amtsgericht in Montabaur> geben müssen. (Rhein-Zeitung, 06.09.2003)
Metaphor	yes	70	14%	Er ließ wahrlich nichts aus: glossierte, stichelte und gab [seinen Senf in bissiger Form] <an das närrische Volk>. (Rhein-Zeitung, 19.01.1998)

	no	1198	48%	Auch dürfen sie [keinen Alkohol] vom Wagen <an die Zuschauer> geben", erklärt er. (Mannheimer Morgen, 11.02.2012)
Transfer sense	abstract	463	5%	Die Verlage gaben [die Rechte] stets <an das größere Haus>. (Nürnberger Zeitung, 05.04.2006)
	concrete	369	75%	Kronauer will [eine Liste mit allen Teilnehmern] <an die Stadt> geben. (Mannheimer Morgen, 23.03.2012)
	propositional	436	66%	Das Ordnungsamt der Stadt wird hierzu [genaue Anweisungen] direkt <an die Jagdausübungsberechtigten> geben. (Rhein-Zeitung, 14.09.2005)
Length Difference	[-33, -1]	396	28%	Dabei seien [323 Konten mit Guthaben von mehr als 100 Mark in einem Gesamtwert von etwa 150 000 Mark] <an den Staat> gegeben worden. (Frankfurter Rundschau, 05.02.1999) In nächster Zeit will Häusser auch [die Negative dieser Werke] <an das Archiv> geben – bisher sind hier nur die Abzüge zu finden. (Mannheimer Morgen, 16.02.2012)
	[-1, 1]	529	52%	Damit kann die Notenbank Dänemarks [zusätzliche Euro-Mittel] <an die Banken> geben. (Hannoversche Allgemeine, 28.10.2008)
	1	172	62%	Der Sängerkreis Neuwied könne nur [Anregungen] <an die Chöre> geben. (Rhein-Zeitung, 19.04.2000)
	[2, 21]	171	58%	Leicht nervös gibt er [die letzten Anweisungen] <an seine rund 30 Mitarbeiterinnen und Mitarbeiter>: "Seid ihr bereit?" (Neue Zürcher Zeitung, 18.10.2002)

