

## Clause linkage and degrees of grammaticalization

### The case of *verdienen* with correlated and non-correlated *dass*- and infinitival complements

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This paper deals with different types of verbal complementation of the German verb *verdienen*. It focuses on constructions that have been undergoing a grammaticalization process and thus express deontic modality, as in *Sie verdient geliebt zu werden* ('She deserves to be loved') and *Sie verdient zu leben* ('She deserves to live') (Diewald, Dekalo & Czicza 2021). These constructions are connected to parallel complementation types with passive and active infinitives containing a correlate *es*, as in *Sie verdient es, geliebt zu werden* and *Sie verdient es, zu leben*, as well as finite clauses with the subordinator *dass* with and without correlative *es*, as in *Sie verdient, dass sie geliebt wird* and *Sie verdient es, dass sie geliebt wird*. This paper attempts to show a close comparative investigation of these six types of constructions based on their relevant semantic and syntactic properties in terms of clause linkage (Lehmann 1988). We analyze the relevant data retrieved from the DWDS corpus of the 20th century and present an expanded grammaticalization path for *verdienen*-constructions. The finite complementation with *dass* is regarded as an example of a separate structural option called "elaboration". Concerning the use of correlative *es*, it is shown that it does not have any substantial effect on the grammaticalization of modal *verdienen*-constructions.

**Keywords:** clause linkage, grammaticalization, correlate, infinitival complements, coherent construction, incoherent construction, animacy, mixed-effects logistic regression models

## 1. Introduction

This study is concerned with variants of verbal complementation of the German verb *verdienen* and their constructional characteristics in connection with their respective degrees of grammaticalization. The study takes up the results of Diewald, Dekalo & Czicza (2021) concerning the grammaticalization of *verdienen* & infinitival complement as a deontic construction and broadens the scenario by looking at the various types of sentential complementation found with *verdienen*. The patterns we are going to investigate are illustrated by the following sentences:

- (1) a. *Adenauer verdiene, immer wieder neu gelesen zu werden, erwiderte GS Gorbatschow.* (DWDS CC20)  
 Adenauer deserve:PRS:SBJV:3SG always again new read:PST:PTCP to be:INF:AUX:PASS reply:PRT:3SG SG Gorbachev  
 ‘Adenauer should be/deserves to be re-read again and again, GS Gorbatschow replied.’
- b. *Die Orgelwerke (op. 21, 52, 54) verdienen es, noch heute mit allem Respekt genannt zu werden.*  
 The:PL:NOM organ works:PL:NOM deserve:PRS:3PL it:ACC still today with all:SG:DAT respect:M:DAT mention:PST:PTCP to be:INF:AUX:PASS  
 ‘The organ works (op. 21, 52, 54) should be/deserve to be mentioned with due respect to the present day.’
- c. *Der Baumeister [...] verdiente bis an das Ende der Welt in einem Etagenhaus zu wohnen [...]* (DWDS CC20)  
 The:M:NOM architect:M:NOM deserve:PRT.3SG till to the:N:ACC end:N:ACC the:F:GEN world:F:GEN in one:N:DAT apartment building-N.DAT to live-INF  
 ‘The builder [...] would deserve to live in an apartment till the end of the world.’
- d. *Die Einleitung des Wiener Sozialisten Engelbert Pernerstorfer verdient es, in aller Ausführlichkeit zu Wort zu kommen* (DWDS CC20)  
 The:F:NOM introduction:F:NOM the:M:GEN Vienna:ADJ socialist:M:GEN Engelbert Pernerstorfer deserve:PRS:3SG it:ACC in all:F:DAT Detail:F:DAT to word:N.DAT to come:INF  
 ‘The introduction by Vienna based socialist Engelbert Pernerstorfer deserves to have its chance to be heard in great detail.’

- (2) a. *Ja, Vera verdient schon, daß er sie liebt.* (DWDS CC20)  
 Yes Vera deserve:PRT:3SG indeed that he her love:PRT:3SG  
 ‘Yes, Vera deserved to be loved by him indeed.’
- b. *Die arme Ophelia hat es nicht verdient, dass sich jemand über sie mokiert.*  
 The:F:NOM poor:F:NOM Ophelia have:PRS:3SG it:ACC not  
 deserve:PST:PTCP that REFL:ACC someone:NOM over her mock:PRS:3SG  
 ‘Poor Ophelia has not deserved to be made fun of.’ (DWDS CC20)

Sentences (1a) to (1d) exemplify *verdienen* with an infinitival complement, always with the infinitive particle *zu*; (2a) and (2b) combine *verdienen* with a finite subordinate clause, introduced by the subordinator *dass*<sup>1</sup> ‘that’. In (1a), (1c) and (2a), the clauses are linked without a correlate in the matrix clause; in (1b), (1d) and (2b) there is the correlate *es* in the *verdienen*-clause. In standard grammatical interpretations, the correlate *es* is seen as indicating the “original” syntactic position of the subordinate clause, in this case direct object, and cataphorically pointing to its extraposition, i.e. its realization behind the right verbal bracket in the so called *Nachfeld* (‘postfield’).

These constructions with clausal complementation are expansions of the transitive construction of the verb *verdienen* as a lexical verb meaning ‘earn’ or ‘deserve’. (3) and (4) show typical examples (Diewald, Dekalo & Czicza 2021).

- (3) *Er verdient Geld durch Unterricht [...].* (DWDS CC20)  
 He:NOM earn:PRT:3SG money:N:ACC through lessons:ADV:INS  
 ‘He earned money by giving lessons.’
- (4) *Aber ihr mögt darüber sagen, was ihr wollt, er verdient doch Respekt.* (DWDS CC20)  
 But you:NOM may:AUX:MOD about it say:INF whatever you:NOM  
 want:PRS:2PL he:NOM deserve:PRS:3SG still Respect:M:ACC  
 ‘You may say whatever you want, he still deserves respect.’

Diewald, Dekalo & Czicza (2021) claim that the verb *verdienen* is undergoing a grammaticalization process which, starting out from the lexical meanings and constructions in (3) and (4), has developed a deontic modal construction like in (1a) and (1c) as well as in (5) and (6), whereby infinitival complements display active as well as passive infinitives.

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1. (2a) shows *daß*, an older spelling of modern *dass*.

- (5) *Gerade dieses Detail, bedenkt Arlecq schreibend,*  
 Especially this detail:N:NOM consider:PRS:3SG Arlecq:M:NOM write:PROG  
*verdiente hervorgehoben zu werden [...].* (DWDS CC2o)  
 deserve:PRT:3SG emphasize:PST:PTCP to be:INF:AUX:PASS  
 ‘This very detail, Arlecq considers while writing, should be emphasized/  
 deserves to be emphasized.’
- (6) *Ein so Elender verdiene nicht zu leben.*  
 One such miserable:M:NOM deserve:PRS:SBJV:3SG not to live:INF  
 ‘Such a miserable one should not/ought not to live.’ (DWDS CC2o)

Modal constructions of *verdienen* with an active or passive infinitive are associated with the meaning ‘should be V-ed’ in the case of the passive infinitive, like in (1a) and (5), or ‘should V’ in the case of the active infinitive, as in (1c) and (6). In this function *verdienen* is comparable to *sollte* (‘ought to’ or ‘should’), as is illustrated by the following examples. Their original a.-versions contain *sollte* which is substituted in the b.-versions by a quasi-synonymous *verdienen*-construction.

- (7) a. *Der Spruch aus Dresden sollte Schule*  
 The:M:NOM saying:M:NOM from Dresden shall:PRT:SBJV:3SG school:F:ACC  
*machen.* (DWDS CC2o)  
 make:INF  
 ‘The saying from Dresden ought to / should catch on.’
- b. *Der Spruch aus Dresden verdient (es)*  
 The:M:NOM saying:M:NOM from Dresden deserve:PRS:3SG (it:ACC)  
*Schule zu machen.* (DWDS CC2o)  
 school:F:ACC to make:INF  
 ‘The saying from Dresden ought to / should catch on.’
- (8) a. *Die Konferenz sollte ohne jegliche*  
 The:F:NOM conference:F:NOM shall:PRT:SBJV:3SG without any:PL:ACC  
*Vorbedingungen abgehalten werden* (DWDS CC2o)  
 precondition:PL:ACC hold:PRF:PST:PTCP be:INF:AUX:PASS  
 ‘The conference ought to /should be held without any preconditions.’
- b. *Die Konferenz verdient (es) ohne*  
 The:F:NOM conference:F:NOM deserve:PRS:3SG (it:ACC) without  
*jegliche Vorbedingungen abgehalten zu werden.*  
 any:PL:ACC precondition:PL:ACC hold:PRF:PST:PTCP to be:INF:AUX:PASS  
 ‘The conference ought to /should be held without any pre- (DWDS CC2o)  
 conditions.’

Diewald, Dekalo & Czicza (2021) show that the *verdienen*-construction with the active infinitive is the most grammaticalized construction on the way towards a

deontic modality marker. The authors suggest that the grammaticalization path of *verdienen* starts out from a transitive verb with a concrete direct object (cf. (3)), proceeds to the construction with an abstract direct object (cf. (4)). The next step are ‘to’-constructions with an infinitive, whereby the passive infinitive construction (cf. (1a) and (5)) is less grammaticalized than the active infinitive constructions (cf. (1c) and (6)). The relative order of this path is postulated to be:

$$\text{lexical } \textit{verdienen} + N_{\text{CONCRETE}} > \text{lexical } \textit{verdienen} + N_{\text{ABSTRACT}} > \text{grammatical } \textit{verdienen} + V_{\text{PP}} + \textit{zu werden} > \text{grammatical } \textit{verdienen} + V_{\text{INF}}$$

This claim rests on observations concerning relevant morphosyntactic and semantic features of the infinitival complement combined with other features in connection with the subject (cf. Diewald, Dekalo & Czicza 2021). The lexical constructions containing *verdienen*, with a concrete, followed by an abstract object being the most and second most grammaticalized constructions respectively, present a stronger grammaticalization process than the grammatical constructions, showing a change of meaning towards deontic modality (Diewald, Dekalo & Czicza 2021: 116).

The scenario suggested in the study quoted above focuses on the central stages of the development of a deontic modality construction with *verdienen*. It does not take into account parallel constructions with other clausal complements of *verdienen* beyond those dubbed grammaticalized, i.e. passive or active infinitives without a correlate in the matrix structure. However, there are further complementation constructions with *verdienen* that are similar to (1a), (1c), (5), and (6). These are the ones illustrated in (1b) and (1d), i.e. passive and active infinitive constructions with the correlate *es*, and those in (2a) and (2b), i.e. finite clauses with the subordinator *dass* with and without correlative *es*. As these four constructions are found with relatively high frequency in the data parallel to the grammaticalized infinitival constructions (without correlates), it may be assumed that these six complementation constructions interact with each other in the process of grammaticalization of the deontic modality construction.<sup>2</sup> From a construction grammar perspective, the interaction between different constructions to be discussed in this paper highlights the question under which circumstances an existing constructional schema (a schematic construction), such as the one of modality, is extended by new members that enter the schema as opposed to its “neighbours” that do not. Diessel (2019: 56f.) discusses the emergence of the secondary modal verb schema containing *gonna*, *wanna* and *gotta* in terms of a

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2. Cf. Los (2005) for the discussion of English infinitives and finite subjunctive clauses, including relevant correspondences between them, from a diachronic perspective.

creation of new schemas. He also points to the fact that existing schemas, such as the one of modality, can be modified. Following his argumentation it can be assumed that an existing construction can be characterized as an “attractor” (Diessel 2019: 59) which is open to new candidates. This assumption is the starting point of the present paper that emphasizes some syntactic and semantic properties of six complementation constructions. By doing so we attempt to make an important contribution in analyzing and describing the constructional field of modality. The six relevant constructions to be investigated in the following are briefly listed for an overview, with the numbering kept from the examples in (1) and (2):

- (1) a. *verdienen* & passive infinitive
- b. *verdienen* & correlate *es* & passive infinitive
- c. *verdienen* & active infinitive
- d. *verdienen* & correlate *es* & active infinitive
- (2) a. *verdienen* & *dass*-clause
- b. *verdienen* & correlate *es* & *dass*-clause

Complementation constructions with finite or non-finite complement clauses involve different techniques of clause linkage. The grammaticalization of new markers of modal verbal periphrasis in German, per definition, involves the fusion of erstwhile independent predicates (verbal elements) into one periphrastic verbal construction, i.e. one sentence (cf. Diewald 1999). Thus, the present study on the interdependence of these six constructions in the rise of a new modal construction entering the existing constructional schema of modality (Diessel 2019: 57) has to connect grammaticalization scales with different variants of clause linkage, for instance to model a grammaticalization scenario that accounts for the development of the grammaticalizing construction as well as its direct bi-clausal neighbors. The close comparative investigation of these six types of constructions concentrates on (a) the semantic and functional equivalence or non-equivalence of the six constructions, and (b) their respective roles in the grammaticalization process, e.g. in terms of enabling or blocking a certain development. In doing so, we want to provide further criteria for a refinement of the possible relative chronology concerning the stages of grammaticalization of deontic *verdienen*-construction.

From this agenda, it is evident that three major problem areas have to be addressed:

1. Firstly, what is the role or function of the two constructions with finite complementation, i.e. of (2a) and (2b), in the context of the grammaticalization of auxiliary *verdienen*? Are they operative in the process of grammaticalization

of the modal construction in any way, e.g. do these patterns have a catalytic effect on the possibility of non-finite complementation? How can the finite complementation constructions be linked to the instances under (1) that contain infinitives?

2. Secondly, what is the status of (1b) and (1d), i.e. the non-finite complement constructions with correlate *es*, as opposed to (1a) and (1c), i.e. the non-finite complement constructions without correlate *es*? On the one hand, the constructions with correlate, i.e. (1b) and (1d), seem to have a similar “modal meaning” to those without correlate, i.e. (1a) and (1c), while, on the other hand, from a “morphosyntactic perspective”, a correlative element like correlative *es* interferes negatively with the auxiliary verbal complex (see 2.1). In other words, do the correlative constructions express deontic modal meaning even if modal (and semi-modal) complexes actually do not allow correlative elements “interrupting” the connection between auxiliary and lexical verb?
3. Lastly, can the relative chronology of the path of grammaticalization leading from the passive variant to the active infinitival construction (cf. above) be confirmed by further arguments concerning clause linkage and by data on the animacy of subjects of the *verdienen* clause?

The questions raised above will be answered by theoretical argumentation and deduction combined with empirical testing. The theoretical background and its projection to German grammatical rules are addressed in Section 2. These reflections lead to some important assumptions on the interconnection of the six constructions, which are the input for the more fine-grained investigations in the empirical part.

Section 3 explains our method and presents the empirical data, which are drawn from the DWDS corpus of the 20th century.<sup>3</sup> Beyond the criteria of +/-finite complementation and +/- correlate *es*, the feature +/-animate, as realized in the subject of the matrix clause (i.e. the *verdienen*-clause), is taken into consideration as an empirically relevant feature.

Section 4 presents the results of the empirical investigation. Section 5 offers a discussion and interpretation of the findings in terms of the theoretical assumptions. The reasoning is that the complementation with *dass* is not conducive to the development of the grammatical variant with modal *verdienen*. Being an example of elaboration, it is rather regarded as a separate structural option. Concerning the use of correlative *es*, this paper shows that it does not have any substantial effect

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3. This corpus contains samples from a wide range of written German belonging to the following four text types: fiction, academic writing, functional writing, and newspapers. For details see Geyken (2007).

on the grammaticalization of modal *verdienen*-constructions. Unlike the presence or absence of correlative *es*, the animacy of the subject of *verdienen* goes hand in hand with the distinction of lexical and grammatical constructions. Section 6 ultimately suggests a modified and expanded grammaticalization path for *verdienen*-constructions.

## 2. Theoretical assumptions

The theoretical considerations and results from earlier studies that are made productive in our investigation of the grammaticalization stages of deontic *verdienen*-constructions comprise (a) concepts of clause linkage and grammaticalization as presented in Lehmann (1988) from a typological perspective (Section 2.1), (b) those topological features of German that are known as coherent and incoherent constructions (Bech 1955; Zifonun et al. 1997; Askedal 1997; Diewald & Smirnova 2010, Section 2.2), (c) studies on the role of correlative *es* in German (Zitterbart 2002, Section 2.3), and (d) the role of the animacy of subjects in grammaticalization (Section 2.4). The final part of this chapter formulates expectations as to the relevant factors and stages pertaining to the grammaticalization scenario of deontic *verdienen*-constructions.

### 2.1 Clause linkage

From a broad typological perspective, Lehmann (1988) analyzes clause linkage as a trade-off between the two antagonistic processes of elaboration and compression (= condensation), which are functionally motivated. In structural terms, the opposite poles of the two driving forces of clause linkage are most conspicuously manifested by parataxis (for elaboration) and embedding (for condensation). More fine-grained effects in between parataxis, on the one hand, and embedding, on the other hand, can be measured by the following six parameters, which address relevant indicators for degrees of clause linkage on several linguistic levels. They are listed in Lehmann (1988: 183) as follows:

1. the hierarchical downgrading of the subordinate clause,
2. the main clause syntactic level of the subordinate clause,
3. the desententialization of the subordinate clause,
4. the grammaticalization of the main verb,
5. the interlacing of the two clauses,
6. the explicitness of the linking



All six parameters are construed as continua between the two (extreme) poles. Furthermore, there are correlations and implicative relations among them. For data on German clause linkage in the case of *verdienen*-constructions, the first four parameters are relevant and are discussed below with reference to our material. This enables us to set up a first classification of the constructions in terms of their position on the scales of each parameter.

**Ad 1. The hierarchical downgrading of the subordinate clause** is described by Lehmann as follows:

At the starting pole of the continuum, there is no hierarchical relation between the two clauses forming the complex sentence. This is the situation which we call parataxis. At the end pole, there is a clear hierarchical relation between them, the subordinate clause being downgraded to a particular, well-defined constituent within the main clause. This is the situation we call embedding. Between the poles, there are various constructions in which the subordinate clause is ever more downgraded. (Lehmann 1988: 184)

This parameter addresses the mutual ranking of two (or more) consecutive clauses. Lehmann points out that a governed clause, typically an object clause governed by the main verb, has the most downgraded status (Lehmann 1988: 185). Seen from this angle, it is obvious that all of our constructions display a similarly high degree of hierarchical downgrading. The non-finite clauses and the finite subordinate *dass*-clauses are hierarchically downgraded in equal measure, as they are embedded under the main predicate *verdienen*, whereby, under a first superficial analysis, they represent object clauses. This can be visualized as follows:

**Table 1.** Rough schema of clause hierarchy

Construction	Superordinate clause	Subordinate clause
1a	<i>verdienen</i> (finite)	passive infinitive
1b	<i>verdienen</i> (finite) & correlate <i>es</i>	passive infinitive
1c	<i>verdienen</i> (finite)	active infinitive
1d	<i>verdienen</i> (finite) & correlate <i>es</i>	active infinitive
2a	<i>verdienen</i> (finite)	<i>dass</i> -clause
2b	<i>verdienen</i> (finite) & correlate <i>es</i>	<i>dass</i> -clause

The six constructions thus form a relatively homogeneous set of data, which in turn can be seen as an “ex post” legitimization for investigating them together from a grammaticalization perspective.

However, though this classification is correct on a coarse syntactic level, there is a need to aim at a more fine-grained description in order to capture the factors leading to a cline of degrees of downgrading. In order to do so, we propose to apply three such factors: type of government, sequential position and correlative construction.

Following Bech's typology of governed infinitives (1955), three actual forms of non-finite verbal expressions can be differentiated in German: bare infinitive, infinitive with the particle *zu* and past participle. Bech refers to these notions as forms of "*Statusreaktion*". Depending on the governing verb/predicate, these forms/status are used in different ways, signaling different kinds of government. Our constructions in (1a)–(1d) show *verdienen* governing the status infinitive with *zu* (both active and passive), while (2a) and (2b) represent cases for governed finite clauses introduced by the conjunction *dass*, which thus are beyond the scope of *Statusreaktion*.

Comparing our constructions to other verbs in German, one can observe semi-modal markers, such as *drohen*, *versprechen*, cf. 2.2, governing the same kind of status as is the case with *verdienen* in (1a)–(1d), on the one hand, and lexical verbs, such as *bedauern* 'regret' being able to govern finite clauses with *dass*, on the other hand. The former group of governing verbs (semi-modals) can be assigned a grammatical meaning and thus a more "grammaticalized type of government" (infinitive with *zu*), the latter ones, i.e. lexical verbs, have a lexical meaning and thus show a "lexical type of government".<sup>4</sup> Since the relationship between semi-modals and their governed infinitival verb, i.e. the grammatical type of government, reflects a higher, per definition grammatical, hierarchical relationship and thus a higher degree of downgrading than lexical government, it can be assumed that *verdienen*-constructions that are formally analogous in this fashion can also be treated as showing a stronger hierarchy, and thus a higher degree of downgrading. In other words, the status infinitive with *zu* can be considered as evidence for subordinated syntagms being hierarchically more downgraded. The result of this assumption is that the constructions with infinitival subordinated clauses under (1a)–(1d) form a group of more downgraded members than (2a) and (2b) with finite subordinated clauses.

This picture can now be complemented by considering the presence of *es*, and the fact that semi-modals never allow correlative elements while lexical verbs do,

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4. Lexical verbs can also govern subordinated clauses containing the infinitival form with *zu*, e.g. *Er bedauert, nicht teilnehmen zu können* and *Er bedauert, dass er nicht teilnehmen kann* ('He regrets not being able to participate'). However, this option is based on subject control, showing that the subjects of the matrix clause and the subordinated syntagm are coreferential. Furthermore, what applies to lexical verbs does not apply to semi-modals in reverse, the latter ones being incapable of governing finite clauses.

which raises the question how to handle the constructions (1b) and (1d), on one hand, both looking like semi-modals with *zu*-infinitive, and on the other hand, containing correlative *es*. We suggest these instances be considered less downgraded than (1a) and (1c) via formal analogy with lexical verbs allowing correlative structures (*es*), and more downgraded than (2a) and (2b) via formal analogy with semi-modals (governing *zu*-infinitive). Similar to the *zu*-infinitive being an indication for a higher (grammatical) hierarchy/government, correlative *es* can be seen as representing lower (lexical) hierarchy/government. Based on these considerations, a scale of three degrees of downgrading can be established with (2a) and (2b) constituting the pole “less downgraded” and (1a) and (1c) occupying the pole most downgraded, with (1b) and (1d) added to the middle area of the scale.

The second factor, referred to as “sequential position” in Lehmann, covers the syntagmatic relation of the two clauses to each other. It is addressed as follows:

The subordinate syntagm may be either positionally included in the main clause, or it may precede or follow the latter. Accordingly, we speak of **central vs. marginal position** of the subordinate syntagm. Many languages possess the constraint that subordinate clauses of a certain type have to have a marginal position with respect to the main clause. (Lehmann 1988: 186)

As evidenced by our data, all six constructions are alike insofar as the subordinate clauses in general do not take a marginal position before the main clause. They prototypically hold a position to the right of the main clause, i.e. the so-called (per definition extraposed) “Nachfeld”. There are, however, some very few instances showing the construction (1a) in left and central position (cf. (9) and (10)), (1c) in central position (as in (11)) and (2a) in left position (cf. (12)).

- (9) *Denn auf dem Scheiterhaufen verbrannt zu werden,*  
 Because on the:M:DAT stake:M:DAT burn:PST:PTCP to be:INF:AUX:PASS  
*verdient jeder [...]* (DWDS CC20)

deserve:PRS:3SG everybody:M:NOM  
 ‘Because everybody deserves to be burnt at the stake.’

- (10) *Aus meines Vaters Berufsleben in diesem*  
 From my:M:GEN father:M:GEN professional life:N:DAT in this:M:DAT  
*Winter blieb mir ein Wort in*  
 winter:M:DAT remain:PRT:3SG me:DAT one:N:NOM word:N:NOM in  
*Erinnerung, das registriert zu werden*  
 remembering:F:DAT that:N:NOM record:PST:PTCP to be:INF:AUX:PASS  
*verdient.* (DWDS CC20)

deserve:PRS:3SG

‘There is only one word concerning my father’s professional life of that winter I can remember that is worth recording.’

- (11) [...] *so daß er nicht mehr ein guter Erzähler, sondern ein schlechter Dichter zu heißen verdiente.*  
 so that he not more one:M:NOM good:M:NOM storyteller:M:NOM but  
 one:M:NOM bad:M:NOM poet:M:NOM to be called:INF deserve:SBJV:PRT:3SG  
 '[...] so he would deserve to be called a bad poet rather than a (DWDS CC20)  
 good storyteller.'
- (12) *Daß ein Mädchen um ihn weint, verdient überhaupt kein Mann [...]*  
 that one:N:NOM girl:N:NOM about him cry:PRS:3SG deserve:PRS:3SG  
 not at all no:M:NOM man:M:NOM (DWDS CC20)  
 'No man ever deserves that a girl should weep over him.'

The rules for central or marginal-final positions are even much more complex in German syntax. They are operative in so-called “correlative constructions” and in the distinction between coherent and incoherent construction. Both issues will be treated separately in later sections (2.2 and 2.3), but have to be briefly addressed here.

“The correlative construction” plays a role in the cline of downgrading. As Lehmann (1988:185) points out, correlative structures take an intermediate place between downgraded and not downgraded. They are “halfway between parataxis and hypotaxis” as they are “subordinate, but not embedded” (Lehmann 1988:185, also page 189; cf. also the notion “Anschluss” in Zitterbart 2002:20). Embedding of the subordinated clause via positioning left from the main one is not possible in case of correlative subordination; the correlative *es* has to be deleted if the subordinated clause is put before the main clause. At this point, it should be noted that the subordinate clauses in correlative constructions (1b), (1d) and (2b) are less downgraded in comparison to their corresponding subordinate clauses in non-correlative constructions (1a), (1c) and (2a).

The distinction between “coherent” and “incoherent” construction of non-finite clauses in German syntax may provide a further, subtle indication of different degrees of hierarchical downgrading. While finite clauses as well as any correlative construction never allow a coherent construction, some of the non-finite clauses do, while others do not. This observation will be specified in 2.2. In terms of the rules of sequential positioning we may state: On the one hand, finite subordinated clauses and any subordinate clauses with a correlative construction are never constructed coherently, i.e. never take a central position. On the other hand, non-finite subordinate clauses without a correlative element diverge in their restriction or non-restriction to marginal or central position, respectively.

Based on these considerations it is possible to establish a scale of downgrading in terms of sequential order with the following three positions: (1a) and

(1c) may be central/coherent and are thus the most downgraded instances, the non-finite syntagms being included in the main clause. (2a) may be embedded preceding the main clause but cannot appear in central position. It is thus less downgraded.<sup>5</sup> (1b), (1d) and (2b) eventually represent correlative subordination (with *es*), which is always extraposed. The subordinated syntagms in these constructions are the least downgraded.

In short, this first parameter turns out to be more complex than expected. Thus, Table 2 offers a provisional judgement. As we have argued, the overall, coarse-grained classification of all six constructions as hierarchically downgraded in a similar fashion is rather straightforward. As shown previously, further distinctions can be achieved by considering status, positioning, correlative construction, and (in-)coherent construction. A preliminary classification, which will be argued for in Sections 2.2. and 2.3, is given in Table 2.

Table 2. Hierarchical downgrading\*

Construction	Superordinate clause	Subordinate clause: downgraded	Relative degree of downgrading: government	Relative degree of downgrading: sequential positioning
1a	<i>verdienen</i> (finite)	passive infinitive	most downgraded	most downgraded
1b	<i>verdienen</i> (finite) & correlate <i>es</i>	passive infinitive	more downgraded	less downgraded
1c	<i>verdienen</i> (finite)	active infinitive	most downgraded	most downgraded
1d	<i>verdienen</i> (finite) & correlate <i>es</i>	active infinitive	more downgraded	less downgraded
2a	<i>verdienen</i> (finite)	<i>dass</i> -clause	less downgraded	more downgraded
2b	<i>verdienen</i> (finite) & correlate <i>es</i>	<i>dass</i> -clause	less downgraded	less downgraded

\* The labels are to be read as follows: “most downgraded” = allowing central position in addition to left marginal position; “more downgraded” = allowing left marginal position, but no central position; “less downgraded” = allowing right marginal position only, which is the default position for subordinate clauses.

5. The infinitives in (1a) and (1c) can also be placed to the left of the main clause. This case is attested with (1a) (cf. (9)), but not with (1c) in our corpus.

**Ad 2. The main clause syntactic level of the subordinate clause** refers to the exact syntactic rank the subordinate clause takes in relation to the clause it is integrated into. Rejecting earlier models featuring a tripartite division between sentence level (above the simple sentence), clause level (within the clause) and verb phrase level, Lehmann assumes “a multiplicity of syntactic levels between the morpheme and the paragraph, much as in constituent structure grammar” (1988:189).

With reference to our topic, the following distinction has to be drawn: Subordinate clauses functioning as object clauses represent a low syntactic level, as they are “inside VP”; infinitives as parts of modal construction represent an even lower syntactic level, namely that of the analytic verb form in “auxiliary periphrasis”. Lehmann illustrates the latter by the example *I will [go] to bed now*, where *will* functions as an auxiliary taking an uninflected verb (an infinitive without *to*) as its complement (Lehmann 1988:191).

Unsurprisingly, this parameter captures the different degrees of grammaticalization of the finite subordinate clauses with *dass* ((2a) and (2b)), which represent the syntactic level of “inside the verb phrase”, as opposed to infinitive constructions without a correlate ((1a) and (1c)), which represent a stage much closer to “auxiliary periphrasis”.

There remain two questions concerning our six constructions: (a) Which syntactic rank should be assigned to infinitive constructions with the correlate *es* on the superordinate level ((1b) and (1d))? (b) How to assess the fact that all infinitive constructions have the infinitive particle *zu*, and not the bare infinitive? These two issues cannot be conclusively solved by reference to the general principles Lehmann (1988) offers, but have to be decided by taking into account research on German syntactic structure in 2.2 and 2.3. A first classification, leaving open these two questions, is given in the following table:

**Table 3.** Syntactic level of subordinate clause

Construction	Syntactic level of subordinate clause	
	Object clause (inside VP)	Auxiliary periphrasis
1a: passive infinitive		X
1b: passive infinitive with correlate <i>es</i> in superordinate clause	X	
1c: active infinitive		X

Table 3. (continued)

Construction	Syntactic level of subordinate clause	
	Object clause (inside VP)	Auxiliary periphrasis
1d: active infinitive with correlate <i>es</i> in superordinate clause	X	
2a: <i>dass</i> -clause	X	
2b: <i>dass</i> -clause with correlate <i>es</i> in superordinate clause	X	

Summing up what is illustrated in Table 3, finite complementation leads to classification as an object clause independently of the presence of the correlate *es* in the superordinate clause. Non-finite complementation without correlate may be tentatively classified as displaying (an important step towards) auxiliary periphrasis of *verdienen* with an infinitival complement. The presence of the correlate *es* in infinitival complementation constructions has to be treated as an instance of object clause inside VP as well.

**Ad 3. The desententialization of the subordinate clause** has to do with the degree to which the subordinate clause is expanded or reduced. This is specified as follows:

In the reduction process, it loses the properties of a clause, it is **desententialized** to varying degrees. Components of the clause which allow reference to a specific state of affairs are dropped; the state of affairs is 'typified'. At the same time, the subordinate clause increasingly acquires nominal properties, both internally and in its distribution. At the end of this process of **nominalization**, the clause becomes a nominal or adverbial constituent of a matrix clause.

(Lehmann 1988: 193)

This parameter captures the well-known fact that non-finite clauses are more desententialized than finite clauses.

Lehmann's examples for weakly desententialized clauses include those introduced by a universal subordinator, like *He believed [(that) I wrote a letter]* (Lehmann 1988: 10). Infinitival clauses depending on a modal verb come out as slightly more desententialized, an example for this being French *Je veux [aller au cinema]*, 'I want to go to the movie' (Lehmann 1988: 193).

In short, this parameter provides a straightforward distinction between non-finite complementation constructions of *verdienen* (1a–1d), which are more desententialized, and subordinated clauses as in (2a, 2b), which display less desententialization.

The presence or absence of a correlate in the superordinate clause is not relevant for this classification. Therefore, it is this parameter that draws a solid line between less grammaticalized finite subordinate clauses and more grammaticalized subordinate infinitive constructions. This is shown in Table (4).

As can be seen by comparing the entries for the lines for (1a) and (1b) to the entries for the lines (1c) and (1d) in the Table 3, a further distinction is evidenced by this parameter: The passive infinitives are assumed to be less grammaticalized than the active infinitives. The criteria for treating passive infinitives as less nominalized are that firstly, they are still complex verbal constructions, and secondly, they retain the demoted position of the agent of the corresponding active structure (cf. 1a. *Adenauer verdiente von allen immer wieder gelesen zu werden*). On the other hand, the active infinitives come out as much more nominalized as they are morphologically simpler and do not allow the addition of a prepositional agent phrase.

**Table 4.** Desententialization of the subordinate clause

Construction	Desententialization (nominalization) of subordinate clause
1a: passive infinitive	lower degree of nominalization = more desententialized
1b: passive infinitive with correlate <i>es</i> in superordinate clause	lower degree of nominalization = more desententialized
1c: active infinitive	higher degree of nominalization = most desententialized
1d: active infinitive with correlate <i>es</i> in superordinate clause	higher degree of nominalization = most desententialized
2a: <i>dass</i> -clause	no nominalization = little desententialized
2b: <i>dass</i> -clause with correlate <i>es</i> in superordinate clause	no nominalization = little desententialized



**Ad 4. The grammaticalization of the main verb** according to Lehmann pertains to “reduction process[es] in the main clause”, i.e. “the grammaticalization of the word governing the subordinate clause” (1988: 201). Lehmann provides the following scale (Diagram 1) for the degrees of grammaticalization of the main verb, which is well-known as an important scale in all grammaticalization studies on verbal constructions (1988: 204):

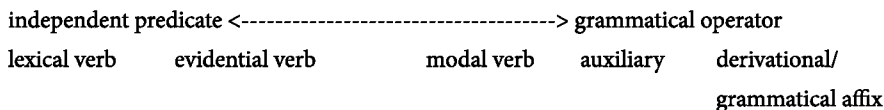


Diagram 1. *Scale of grammaticalization of main verb* (Lehmann 1988: 204)

While the rightmost stage, i.e. the affixation of the erstwhile independent verb of the superordinate clause as a grammatical marker to the verb of the subordinate clause, is not relevant for cases of grammaticalization in present day German, the cline leading from a lexical verb (potentially via an evidential stage) to a modal verb is a well-known pathway of the grammaticalization of new grammemes for modal verbal categories in German. Moreover, it is relevant for the grammaticalization of *verdienen* & infinitive.

Diewald, Dekalo & Czicza (2021) show that the verb *verdienen* with infinitive constructions is grammaticalized to a certain degree as opposed to its prototypical main verb usage, with accusative NPs as objects. Comparing (3) and (4), as representations of (lexical) main verb usage, with (5) and (6) showing deontic modal meaning (sentences repeated here for convenience with the original numbering), one can assume that *verdienen* as a modal marker modifies the meaning of the semantically subordinate infinitives *hervorgehoben zu werden* as in (5) and *leben* as in (6).

- (3) *Er*        *verdiente*    *Geld*            *durch*    *Unterricht* [...]. (DWDS CC20)  
 He:NOM earn:PRT:3SG money:N:ACC through Lessons:ADV:INS  
 ‘He earned money through giving lessons.’
- (4) *Aber ihr*        *mögt*            *darüber sagen,*    *was*        *ihr*  
 But you:NOM may:AUX:MOD about it say:INF whatever you:NOM  
*wollt,*        *er*        *verdient*        *doch*    *Respekt.*            (DWDS CC20)  
 want:PRS:2PL he:NOM deserve:PRS:3SG still respect:M:ACC  
 ‘You may say whatever you want, he still deserves respect.’

- (5) *Gerade dieses Detail, bedenkt Arlecq schreibend,*  
 Especially this detail:N:NOM consider:PRS:3SG Arlecq:M:NOM write:PROG  
*verdiente hervorgehoben zu werden, [...].* (DWDS CC2o)  
 deserve:PRT:3SG emphasize:PST:PTCP to be:INF:AUX:PASS  
 ‘This very detail, Arlecq considers while writing, should be emphasized/  
 deserves to be emphasized.’
- (6) *Ein so Elender verdiene nicht zu leben.*  
 One such miserable:M:NOM deserve:PRS:SBV:3SG not to live:INF  
 ‘Such a miserable one should not/ought not to live.’ (DWDS CC2o)

It is evident that the constructions with finite complementation retain the verb *verdienen* in a less grammaticalized stage; in the constructions with non-finite complementation *verdienen* has proceeded “down” the grammaticalization cline. Within this group, the correlative structures are taken to be less grammaticalized than those without a correlate, as the correlate retains the potential of *verdienen* to bind an object and verbal characteristics. Table 5 summarises the threefold distinction:

Table 5. Grammaticalization of the main verb

Construction	Degree of grammaticalization of <i>verdienen</i>
1a: passive infinitive	medium degree of grammaticalization
1b: passive infinitive with correlate <i>es</i> in superordinate clause	lower degree of grammaticalization
1c: active infinitive	medium degree of grammaticalization
1d: active infinitive with correlate <i>es</i> in superordinate clause	lower degree of grammaticalization
2a: <i>dass</i> -clause	no grammaticalization
2b: <i>dass</i> -clause with correlate <i>es</i> in superordinate clause	no grammaticalization

Summarizing this section, we may conclude that the research of Diewald, Dekalo & Czicza (2021) together with the criteria offered by Lehmann (1988) support the classification of the infinitive constructions as the most grammat-

icalized in comparison to other relevant constructions (with nominal objects and with subordinate *dass*-clauses). *Verdienen* in infinitive constructions is auxiliaryised to some degree, which sets it apart from typical lexical verbs. The straightforward division between infinitival and finite subordination (constructions under 1 versus constructions under 2) is supported so far. Table 6 compiles the findings so far:

Table 6. Overview of clines of grammaticalization for parameters of clause linkage

	1a	1b	1c	1d	2a	2b
Constructions	passive	passive	active	active infinitive	subordinate	subordinate
Lehmann's	infinitive	infinitive with	infinitive	with <i>es</i>	<i>dass</i> -clause	<i>dass</i> -clause
parameters	without <i>es</i>	<i>es</i>	without <i>es</i>		without <i>es</i>	with <i>es</i>
1 hierarchy	more downgraded	less downgraded	more downgraded	less downgraded	more downgraded	less downgraded
2 syntactic subordination	auxiliary periphrasis	VP-internal	auxiliary periphrasis	VP-internal	VP-internal	VP-internal
3 desen- tentialization of subordinate clause	more desententialized	more desententialized	most desententialized	most desententialized	little desen- tentialized	little desen- tentialized
4 gramma- ticalization (GR) of main verb	medium degree of GR	lower degree of GR	medium degree of GR	lower degree of GR	no GR	no GR

What cannot be judged conclusively from the parameters and from the values attributed to our constructions is the impact of the correlate *es*, which appears together with each of the three syntactic formats the subordinate clause can take (active infinitive, passive infinitive, *dass*-clause). The only parameter that singles out infinitives (active and passive alike) without correlate *es* against all other constructions is parameter 2, syntactic subordination. However, this parameter, too, does not differentiate the possible effect of *es* versus the possible effect of the subordinating *dass*-clause.

In the light of this situation, it is necessary to bring to attention the close interaction between the two reductive processes described in parameters 3 and 4, i.e. the reduction of the subordinate clause and the reduction of the main verb respectively. Lehmann describes this interaction as follows:

[T]here are two ways of reducing a complex sentence to a simple one (and conversely, two ways of expanding a clause to a complex sentence). First, we may desententialize the subordinate clause, turning it into a simple constituent of the main clause. Second, we may grammaticalize the governing verb, turning it into

an affix which modifies the meaning of the semantically subordinate verb. *In both cases, the subordinate verb becomes a constituent of the main clause: in the first case, a dependent one, in the second case, its main verb.* [emphasis added]

(Lehmann 1988: 204)

The next sections deal with the details of those two syntactic features of German that lie at the core of this interaction between distinct parameters of clause linkage: coherent vs incoherent construction (Section 2.2), and the correlate construction with *es* (Section 2.3).

## 2.2 Coherent vs. incoherent construction

Claiming that *verdienen* in examples like in (1) is a modal auxiliary verb amounts to saying that *verdienen* together with the infinitive constitutes a verbal complex, that is one single predication. Grammaticalized verbal complexes with infinitives in German typically embed the bare infinitive, e.g. the regular modal verbs (cf. *kann, muss, mag, will, soll, darf fliegen*) and the so-called “future construction with auxiliary” *werden* (cf. *wird fliegen*).

Beyond auxiliaries taking a bare infinitive, there exists a group of verbs embedding infinitives with the infinitive particle *zu*. These are verbs like *scheinen* ‘seem’, *drohen* ‘threaten’, *versprechen* ‘promise’, followed by *zu* ‘to’ with Infinitive, as the following examples show:<sup>6</sup>

- (13) *Fritz hat hier und da von sich hören lassen. Es scheint ihm gut zu gehen.* (DWDS CC20)  
 Fritz have:PRS:3SG here and there of he:REFL:DAT hear:INF let:INF it:NOM  
 seem:PRS:3SG he:M:DAT well to go:INF  
 ‘Fritz has been in touch here and there. He seems to be doing well.’
- (14) *Sie scheint mit ihm Orgien zu feiern, das belastende Material liegt vor.* (DWDS Spoken German)  
 she seem:PRS:3SG with he:M:DAT orgy:PL to celebrate:INF the:N:NOM  
 incriminate:N:NOM material:N:NOM exist:PRS:3SG  
 ‘She seems to celebrate orgies with him, we have the incriminating material at our disposal.’

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6. These verbs are extensively treated in their synchronic status of grammaticalization and their diachronic development in Diewald & Smirnova (2010). Examples (9)–(13) are repeated from this study with newly added glosses.

- (15) [...] *Wenn ein Haus aus den Nähten zu  
 When one:N:NOM house:N:NOM out of the:PL:DAT seam:PL:DAT to  
 platzen droht.* (DWDS CC20)  
 burst:INF threaten:PRS:3SG  
 ‘When a house threatens to burst at the seams.’
- (16) *Und nun steigt der Rhein [...] zu einst so seltener  
 And now increase:PRS:3SG the:M:NOM Rhine to once such rare:F:DAT  
 Höhe an, droht der Wasserstand des  
 height:F:DAT on threaten:PRS:3SG the:M:NOM water level:M:NOM the:N:GEN  
 Jahres 1920 wieder erreicht zu werden.* (DWDS CC20)  
 year:N:GEN 1920 again reach:PST:PTCP to be:INF:AUX:PASS  
 ‘Now the Rhein is rising to a level seldom previously reached and threatening  
 to reach the level of the year 1920.’
- (17) *London steht in den nächsten Wochen vor  
 London stand:PRS:3SG in the:PL:DAT next:PL:DAT week:PL:DAT before  
 einer Versteigerung von Autographen und Büchern, die  
 one:F:DAT auction:F:DAT of autograph:PL:DAT and book:PL:DAT that:PL:NOM  
 bei Sotheby zu einer großen Sensation zu werden  
 at Sotheby to one:F:DAT big:F:DAT sensation:F:DAT to be:INF:AUX:PASS  
 verspricht.* (DWDS CC20)  
 promise:PRS:3SG  
 ‘In the next weeks London will experience an auction of autographs and books  
 which promises to be a big sensation at Sotheby’s.’

In German grammars this group of verbs is treated under labels like “semi-modals” or “semi auxiliaries”,<sup>7</sup> highlighting the fact that we are dealing with verbal constructions that are approaching the degree of grammaticalization of modal verbs, but that have not yet reached such a degree. The intermediated status of these verbs is documented by the requirement of an infinitive with the infinitive particle *zu* (cf. Section 2.1, ad parameter 2).

Beyond this straightforward, lexically triggered selectional restriction relevant for the group of semi-modals, there are remarkable differences of syntactic behavior for each individual verb depending on its respective contextual meanings, i.e. on a more or less grammatical function. This syntactic feature is the distinction between coherent and in-coherent serialization, which was first discovered by Bech (1955). It describes the syntagmatic behavior (positioning) of the infinitive with respect to its finite verb: In a coherent construction the infinitive

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7. For terminology also confer e.g. Cornillie (2008); Diewald & Stathi (2019).

appears within the verbal bracket in the middle field; in an incoherent construction the infinitive clause is extraposed to the right of the right verbal bracket (cf. Zifonun et al 1997: 2191).

The coherent construction correlates with a high degree of grammaticalization. Fully grammaticalized auxiliaries have to be constructed coherently. Less grammaticalized verbs, e.g. the semi-modals, display variation insofar as they allow coherent as well as incoherent construction (together with a systematic change of meaning/function).

Due to the topological rules of the verbal bracket in German, the expression of this feature can be easily tested in subordinate clauses, introduced e.g. by the subordinator *dass* 'that'. Examples for obligatorily coherent constructions are given in (18) and (19).<sup>8</sup> (18) shows that, unsurprisingly, the modal verb *müssen*, which selects the bare infinitive, has obligatory coherent construction. (19), on the other hand, shows that the semi-modal *scheinen*, which takes a *zu* infinitive, also requires coherent construction (which is evidence for the high degree of grammaticalization of *scheinen* & *zu* & infinitive).

- (18) a. [...] *dass sie alles selbst schreiben muss*  
 [...] that she everything herself write:INF must:PRS:3SG  
 ' [...] that she must write everything on her own.'  
 b. \*... *dass sie muss alles selbst schreiben*
- (19) a. [...] *dass sie alles selbst zu schreiben scheint.*  
 that she everything herself to write:INF seem:PRS:3SG  
 ' [...] that she seems to write everything on her own.'  
 b. \*... *dass sie scheint, alles selbst zu schreiben.*

Other constructions of verbs/predicates + *zu* + infinitive never have access to coherent construction. They are obligatorily incoherent in their syntagmatic construction (Reis 2005), as the following examples show. The coherently constructed (b) versions are not acceptable.

- (20) a. *Mit Genugtuung habe ich bemerkt, daß*  
 with satisfaction have:PRS:1SG:AUX:PFCT I notice:PST:PTCP that  
*besonders die Ausländer ganz erstaunt waren, hier*  
 especially the:PL:NOM foreigners pretty surprise:PST:PTCP be:PST:3PL here  
*einen solchen Betrieb zu sehen.* (DWDS CC20)  
 one:M:ACC such:M:ACC activity to see:INF  
 'I noticed with satisfaction that foreigners in particular were pretty surprised to witness such an activity here.'

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8. Cf. Diewald (2000: 341), from which the following examples are taken.

- b. \**daß besonders hier einen solchen Betrieb zu sehen die Ausländer ganz erstaunt waren,*
- (21) a. *Obgleich ich in Paris manchmal sehr, sehr spät nach Hause kam,*  
 Although I in Paris sometimes very very late to home come:PST:1SG  
*habe ich nicht einen einzigen*  
 have:PRS:1SG:AUX:PFCT I not one:M:ACC single:M:ACC  
*Kutscher angetroffen, der sich weigerte,*  
 coach driver:M:ACC meet:PST:PTCP the:M:NOM:RPRN REFL refuse:PST:3SG  
*mich zu fahren.* (DWDS CC20)  
 I:ACC to drive:INF  
 ‘Although it sometimes was really late I came home in Paris there was no coachman refusing to drive me home.’
- b. \**[...] habe ich nicht einen einzigen Kutscherangetroffen, der sich mich zu fahren weigerte.*

This behavior may be seen as a language specific expression of what Lehmann (1988) describes as the cline of syntactic subordination (cf. criterion 2 in 2.1); Coherent construction is the strict serialization of individual verbal elements in one verbal phrase, and thus evidence for deep subordination of the infinitive clause in terms of auxiliary periphrasis.<sup>9</sup>

As grammaticalization is a gradual process, it does not come as a surprise that there exist verbs or predicating constructions that may be construed coherently or incoherently due to their intermediate state in grammaticalization and the variable usage patterns resulting from that intermediate state.

These constructional options typically coincide with semantic and functional differences; instances with coherent construction typically show more grammatical meaning, while instances with incoherent construction tend to more lexical readings. This is observable in verbs like *versprechen* and *drohen*: in their semi-modal function they are construed coherently; when incoherent construction occurs, the respective lexical readings are dominant.

The schematic example in (22) shows that the lexeme *versprechen* itself allows both options.

In (23), which due to contextual features can only have the more grammaticalized reading, the incoherent construction is not possible (23a); the coherent

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9. Another interpretation, using Lehmann's parameters of grammaticalization (1982/2015) which are not to be confounded with the parameters for clause linkage above, might describe this behavior as an indication of increasing boundedness (parameter 4 in Lehmann 1982/2015). *Müssen* 'must', and the semi-modal (or evidential) verb *scheinen*, which appear only in coherent construction, display increased boundedness; and thus a strong degree of grammaticalization. They are more auxiliary-like.

construction (23b) is the only correct solution (cf. Askedal 1997:13), who observes that the extraposition of the infinitive complement of evidential *versprechen* is not possible.

- (22) a. *Incoherent construction*  
 [...] *dass er versprach, uns morgen zu helfen.*  
 that he promise:PRT:3SG we:PL:DAT tomorrow to help:INF  
 ‘[...] that he promised to help us tomorrow.’
- b. *Coherent construction*  
 [...] *dass er uns morgen zu helfen versprach.*  
 that he we:PL:DAT tomorrow to help:INF promise:PRT:3SG  
 ‘[...] that he promised to help us tomorrow.’
- (23) a. \*[...] *dass dieser Streit versprach, große Erfindungen hervorzurufen.*  
 that this:M:NOM quarrel promise:PRT:3SG great:PL:ACC  
 invention:PL:ACC evoke.to:INF  
 ‘[...] that this quarrel promised to evoke great inventions.’
- b. [...] *dass dieser Streit große Erfindungen hervorzurufen versprach.*  
 ‘that this quarrel promised to evoke great inventions.’

(24) and (25) illustrate the analogical situation for the semi-modal *drohen + zu + infinitive*. (24) exemplifies the lexical version with incoherent construction. It is restricted to this reading and cannot have the modal, respectively, evidential reading (cf. Diewald & Smirnova 2010:113). (25) is the more grammaticalized (modal/evidential) reading, strongly favoring coherent construction; (25b) is not accepted by most speakers and grammarians, and is therefore flagged with two question marks.<sup>10</sup>

- (24) *Ich weiß, dass sie droht, mich zu verlassen.*  
 I know:PRS:1SG that she threaten:PRS:3SG I:ACC to leave:INF  
 ‘I know that she threatens to leave me.’

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10. Diewald & Smirnova (2010:113f.) comment on the degree of acceptability of (25b) as follows: “there are conflicting opinions as to whether extraposition of the infinitive complement is possible (or acceptable). Zifonun et al. (1997) assume that extraposition is acceptable, whereas e.g. Askedal (1997) and Heine and Miyashita (2008) do not agree with this analysis: As regards this question we agree with the majority of the authors in assuming that extraposition is essentially not possible (even if not fully blocked). This may be seen as proof of the increasing degree of bondedness between the grammaticalized item *drohen* and the lexical material (*zu*-infinitive) to which it bears a syntagmatic relationship.”



- (25) a. *Ich weiß, dass sie in Vergessenheit zu geraten droht.*  
 I know:PRS:1SG that she in oblivion:F:ACC to get:INF threaten:PRS:3SG  
 ‘I know that she threatens to be forgotten.’
- b. ??*Ich weiß, dass sie droht, in Vergessenheit zu geraten.*  
 I know:PRS:1SG that she threaten:PRS:3SG in oblivion:F:ACC to get:INF  
 ??‘I know that she threatens to be forgotten.’

In short: infinitives in modal and semi-modal verbal complexes usually constitute a coherent verbal structure (Dudengrammatik 2016: 859f.). Obligatory coherent construction is an important indicator of grammaticalization: strongly grammaticalized items like the modal verbs and the semi-modal *scheinen* have obligatory coherent serialization, while others like *versprechen* and *drohen* may appear as coherent or incoherent constructions, with the former having the more grammaticalized and the latter the more lexical meaning.

Now, what is the behavior of *verdienen*-constructions with infinitive with regard to this feature? *Verdienen* with *zu*-infinitive, too, can be found in coherent and incoherent encoding, cf. the coherent example in (26), and the incoherent construction in (27).

- (26) *Die zuletzt angeführte Aufgabe beschäftigt die normativen Wissenschaften, die unter den Geisteswissenschaften ganz besonders hervorgehoben zu werden verdienen.* (DWDS CC20)  
 The:F:NOM last mention:PART:F:NOM task:F:NOM concern:PRS:3SG  
 die normative science:PL:ACC which:PL:NOM among the:PL:DAT  
 arts:PL:DAT wholly especially emphasise:PST:PTCP to  
 be:INF:AUX:PASS deserve:PRS:3PL

‘Normative sciences are concerned with the issue mentioned above and it is these sciences that, among humanities, more particularly deserve to be emphasized.’

- (27) *Das Buch ist so gut, daß es verdiente, umgeschrieben zu werden.* (DWDS CC20)  
 The:N:NOM book:N:NOM be:PRS:3SG so good that it deserve:PRT:3SG  
 rewrite:PST:PTCP to be:INF:AUX:PASS
- ‘The book is so good that it deserved to be rewritten.’

For the time being, we leave the question open whether this implies a difference in meaning.

### 2.3 Correlative *es*, clause integration and grammaticalization

As most contemporary German grammars show, there are different types of implementing complements of verbs such as the direct object of *verdienen*, cf. the following examples of complement realization compared to those in (1a)–(2b).

- (28) *Dein Schwager verdient Geld in Hülle und Fülle, hat ein Geschäft, verdient abends noch Geld im Theater.* (DWDS CC20)  
 Your brother-in-law earn:PRS:3SG money:N:ACC in cover:F:DAT and wealth:F:DAT have:PRS:3SG one:N:ACC shop:N:ACC earn:PRS:3SG evening:ADV even money:N:ACC in:N:DAT theatre:N:DAT  
 ‘Your brother earns money in abundance, he owns a shop and earns even money at night at the theatre.’
- (29) *Er will sie nur warten und schmachten lassen und sie strafen, wie sie es verdient.* (DWDS CC20)  
 He want:PRS:3SG her only wait:INF and languish:INF let:INF and her punish:INF as she it:ACC deserve:PRS:3SG  
 ‘He just wants to see her wait and languish and he wants to punish her like she deserves it.’

Possible formal types for implementing the direct object of *verdienen* are NPs with a noun as head (*Geld*), as is the case in (28), or a pronoun as a head like in (29) (*es*, here as an anaphoric element, cf. also (3) and (4)). The addition of propositions to the *verdienen*-predication can lead to finite clauses with *dass* or to non-finite ones with the infinitive particle *zu*, cf. (1a)–(2b). Beside the variation concerning finiteness, we can observe a phenomenon represented in (1b) and (2b): the use of correlative *es*. This kind of complement realization is regarded as a construction type of its own within the domain of subordination (Fabricius-Hansen 1992: 470; Zifonun et al. 1997:1475; Zitterbart 2002:20, 33). It shows some functional advantages, such as morphological transparency (case marking by means of using a pronoun standing for the dependent clause in the main one), on the one hand, and the possibility to structure information, on the other hand (Zifonun et al. 1997:1476). However, taking such general principles as a basis can be questioned, due to the fact that rules and criteria affecting the existence or deletion of correlative *es* seem to make up a highly complex set of parameters. Accordingly, the valency of the verb, the type of the given syntactic environment, specific words (like particles) and information structure, the length of the main clause, among some others have been considered, mainly theoretically, but in some cases

also empirically, in the literature.<sup>11</sup> With respect to these parameters there seems to be a general consensus about the nature of using correlative *es*, namely that a continuum between obligatory presence and obligatory absence of *es* can be assumed. Following our objective, however, the focus is on the cases with and the ones without correlative *es* in a binary fashion by asking what kind of impact correlative *es* has on the nature of our constructions containing *verdienen* in combination with infinitives and *dass*-clauses.

Combining this issue with the considerations on clause linking proposed by Lehmann (1988) (cf. Chapter 2.1) and with the principle of coherence (cf. Chapter 2.2), one can say, following Lehmann, that correlative constructions are to be positioned somewhere between the two extreme poles, i.e. maximal elaboration and maximal compression. As Lehmann points out that they are “halfway between parataxis and hypotaxis” (Lehmann 1988:185, cf. also 7 and 29). His examples, however, represent different types of relative clauses containing resumptive correlates rather than object clauses with non-resumptive correlates as is the case in (1b), (1d) and (2b). Nevertheless, it can be assumed that our correlates are also capable of interrupting coherent connections between verbal elements, such as *verdienen* and lexical verbs. In doing so, correlative *es* works against the coherence principle in verbal complexes. At the same time, originating from real phoric usages, *es* can be regarded as a kind of linking device between main and subordinate (object) clause, thereby strengthening the explicitness of linking which is Lehmann’s 6th parameter. Finally, looking at Lehmann’s first parameter, the downgrading of clauses, correlative linking is positioned in the middle of the continuum between independent and embedded clauses (Lehmann 1988: 7). This is the case that Zitterbart (2002: 20) calls “Anschluss” (adjoining).

Summing up, one can say that correlative *es*, on the one hand, is a weakening device when we are concerned with embedding (downgrading) and with coherence in the verbal complex, while, on the other hand (and at the same time), it is a strengthening element with respect to the explicitness of linking, setting up an expectation for an upcoming object clause and clearly showing its syntactic role. As correlative linking occurs both with *dass*-clauses (2b) and non-finite complementation (1b and 1d), these structural options seem to be indifferent towards the types of subordinate constructions insofar as they appear with obviously less grammaticalized subordinate constructions (*dass*-clauses) as well as with more grammaticalized subordinate constructions (the infinitive constructions). In the next section, we will check by statistical testing whether this intuition is right (cf. model 3 in 4.2, and model 1, which particularly focusses on correlative *es* in con-

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11. See Pütz (1975); Zitterbart (2002); Holler (2013). For a detailed overview concerning major factors of using *es* utilizing empirical data, see Ulvestad/Bergenholtz (1979, 1983).

nection with subject features in the *verdienen*-construction with finite constructions (1a to 1d)).

In order to do so, a further aspect is introduced into our analysis, which has not played a role so far in the parameters for clause linkage and “Statusreaktion” / “coherence”. It is the feature of the animacy of the subject, which is assumed to play an important role both typologically and in grammaticalization studies (Comrie 1989; Kuteva 2001; Diewald 1999). By considering this additional feature, we expect to be able to increase the discriminatory power of our analysis where the syntactic features remain indeterminative, i.e., as just mentioned, (a) concerning the effect of the correlate *es* in the infinitive constructions, and (b) the animacy of the subject and the distinction of passive versus active infinitives (see model 2 in 4.2).

#### 2.4 Animacy of the subject in grammaticalization

Using the animacy hierarchy rests upon two important observations, one of which has its source in typological research and the other one in research on language change. First, from a more general point of view, animacy is regarded as a universal conceptual category that in many ways influences grammatical features and manifests itself in structural properties (Comrie 1989:185f.), such as case marking of agents and patients, which is the most well-known phenomenon possibly controlled by animacy in many languages (Comrie 1989:189). Grammaticalization theory has made use of the concept of animacy and its effects on structural features on the morphological and syntactic level to describe different processes of abstraction along the animacy scale (*animate* → *inanimate*) within language change. Kuteva (2001:125ff.) shows the development of the Bulgarian future marker *šte* from the verb *xǔšte* (‘want’, 3SG.PRS) leading from contexts with volitional (and thus animate) subjects to all other contexts with no subject restrictions of this kind. Diewald (1999) also uses the concept of animacy, in conjunction with other parameters such as definiteness and nouniness, to characterize grammaticalizing modals in German taking animate subjects in the first period followed by inanimate ones later. This kind of loss of restrictions in grammaticalization processes can be regarded as a specific type of abstraction, during which a class of elements with which the grammaticalizing element is in construction is expanded (host-class expansion, Himmelmann 2004: 32). Regarding *verdienen*, we assume that the expansion of the subject class of grammaticalizing *verdienen* from volitional and animate-only subjects to inanimate subjects can be referred to as an important aspect of this grammaticalization process. Still, this does not need to happen at all levels in this general way. Research on relevant contexts in grammaticalization processes has shown that relevant features, such as animacy,

can be closely linked to specific types of context in the process of grammaticalization. One decisive step towards grammatical meaning is bound to a context that heavily restricts semantic and syntactic features, thus excluding the possibility of the older, more lexical interpretation. This stage has been dubbed the “isolating context” for the new grammatical meaning (Diewald 2006, cf. also 4.2). When the process of grammaticalization is carried on, these restrictions are discarded and make way for an expansion of possible syntactic and semantic contexts (cf. host class expansion). As to the semantic features of the subject, Diewald (1999) has shown for the grammaticalization of modal verbs in German, that, while the original perfecto presents were restricted to animate subjects, an important contextual feature for the development of a stable epistemic meaning was (among further features) an inanimate, often expletive subject. Only when grammaticalization was completed could all types of subjects, i.e. also animate ones, occur in instances of epistemic modal constructions. Thus, the “loss of semantic restriction” in grammaticalization is a complex process. The first phase is characterized by semantic change that is constrained to particular constructions in which this new feature is highly preferred; the second phase is the expansion (or rather loss) of the semantic restriction in the new construction.

In the present paper, a simplified version of the animacy scale is used, applying a binary categorization in *animate* (human and animal) and *inanimate* (all other entities) subjects. A change from *animate* to *inanimate* is expected along the grammaticalization degrees with respect to *verdienen*.<sup>12</sup> While the full verb *verdienen* is restricted to animate subjects, a fully grammaticalized modal *verdienen*-construction (per definition) has to have dropped any subject restriction, as is observable in e.g. epistemic modals like *kann*. Stages in between are likely to show subject restrictions that are (a) distinct from the original subject restrictions (e.g. animate vs. inanimate) and that (b) display abstraction in terms of semantic grammaticalization scales (cf. concrete vs. abstract objects in general).

### 3. Data and methods

In the present study, the DWDS Core Corpus for the 20th century was utilised as our data source (Geyken 2007). After extracting all examples with *verdienen*, we manually checked them to sort out relevant types containing *verdienen* in combination with non-finite object complementation and *dass*-clauses in the object slot.

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12. With respect to *dass*-complementation, it has to be noted that we focus on the subject of *verdienen* and not on that of the dependent *dass*-clause. They can (but do not need to) be coreferential.

Then, we grouped both instantiations in correlative and non-correlative ones, on the one hand, and we differentiated those having an animate subject from the ones having an inanimate subject, on the other hand. We also considered passive (see 1a and 1b) and active non-finite forms (see 1c and 1d).

Consequently, the final data set contains 452 instantiations of *verdienen*-constructions. There are two comments to be made regarding the dataset and the final number of 452 occurrences that have eventually been analyzed. First, with respect to *verdienen* combined with finite clauses, three instances containing the relative pronoun *was* instead of *dass* in the dependent clause have been excluded, since these clauses must be considered referring to objects and not propositions. Secondly, concerning infinitival complements, one sentence has been discarded due to being a subjectless passive, and thus lacking the possibility of being assigned a categorizable subject.<sup>13</sup>

In the present survey, mixed-effects logistic regression, i.e. a type of regression analysis with categorical dependent variables, is applied in order to gauge usage differences between two constructions with *verdienen* (i.e. with active and passive infinitives) and between constructions with and without the correlate *es* by means of two predictors, i.e. fixed-effect variables: (a) the position of the non-finite verbal complements with their arguments within a construction (coherence), and (b) the animacy of subject referents. Beside the fixed-effect variables, a random-effect variable has to be taken into account, namely texts, in order to minimize any possible bias that could be caused by highly contributing texts in the resulting statistical model.

## 4. Results

### 4.1 Observed counts

There are 452 occurrences of relevant *verdienen*-constructions in total, 413 of which show *verdienen* combined with a passive or active infinitive and 39 combined with a finite clause. This shows a small number of *dass*-complementation as opposed to infinitives. According to the typology given in 1 and 2.1, the following table shows the number of each relevant construction:

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13. This is the following sentence: *In diesem Zusammenhang verdient aber noch eines Mannes gedacht zu werden, der uns Juden besonders interessiert* (DWDS CC20). Nevertheless, this usage seems to be clear-cut evidence for a modal meaning of *verdienen* insofar as *verdienen* in this case bears a paradigmatic relation to modals modifying the main verb in the same way in the subjectless version of the passive voice without requiring a subject, which would not apply to lexical verbs.

Table 7. Number of relevant constructions with *verdienen*

construction	corr. <i>es</i>	
	– corr. <i>es</i>	+ corr. <i>es</i>
Passive inf.	318 (1a)	34 (1b)
Active inf.	50 (1c)	11 (1d)
<i>dass</i> -clause	17 (2a)	22 (2b)

The large difference between a total of 413 instances with infinitive constructions and 39 instances with *dass*-constructions is an indication that the latter one probably has to be seen as syntactic diversification and cannot be assumed to have much of an impact on the grammaticalization of the modal construction with infinitive complements.

In addition to the features “active/passive infinitive” and “presence/absence of correlate” shown in Table 7, our data are classified according to the features “(in)coherence” and “animacy”, explained and illustrated in the previous sections (cf. 2.2 and 2.4). Based on these parameters, we are interested in the following correlations formulated as questions:

- i. Is the presence/absence of correlative *es* connected to the degree of grammaticalization suggested by the animacy of *verdienen*-subjects?
- ii. Is animacy connected to the type of infinitive (active/passive) in the relevant *verdienen*-constructions?
- iii. Is (in)coherence connected to the type of infinitive (active/passive) in the relevant *verdienen*-constructions?

These questions aim at relevant correlations between the presented features and are meant to highlight some important assumptions concerning the relationship between different stages of grammaticalization with respect to *verdienen* (see 4.2). As has been mentioned in several places before, there is a basic difference between the two structural options non-finite vs. finite complementation (cf. (1a)–(1d) vs. (2a)–(2b)), the former one allowing the development of modal meaning via grammaticalization as opposed to the latter one (*dass*-clauses). According to this differentiation, these two basic structural options are dealt with separately. Our questions (i)–(iii) are thus restricted to non-finite complementation (concerning the status of *dass*-clauses in the “big picture”, see below).

#### *Ad (i)*

Concerning *verdienen* with infinitive complements according to the features “presence or absence of correlative element” (included in the typology shown

in Table 7) and “animacy of subject”, respectively, the following results can be observed:<sup>14</sup>

Table 8. *verdienen* + INF with respect to correlative *es* and animacy of subjects

Inf. +/- <i>es</i>	animacy of subject		
	Animate	Inanimate	Propositional
Inf. - <i>es</i> (1a) + (1c)	94	226	48
Inf. + <i>es</i> (1b) + (1d)	19	26	0

Obviously, animate as well as inanimate subjects appear in every of the four constructions 1a to 1d.

*Ad (ii)*

Considering the difference between passive and active forms with respect to the animacy of the subjects, we find the following results:

Table 9. *verdienen* + INF with respect to active/passive of INF and animacy of subjects

construction	animacy of subject		
	Animate	Inanimate	Propositional
Passive inf. (1a) + (1b)	78	227	47
Active inf. (1c) + (1d)	35	25	1

Passive infinitives are much more frequent than active infinitives. Subjects are animate as well as inanimate in both cases. At surface level, the passive infinitive seems to prefer inanimate subjects, while the active infinitive has no such bias.

*Ad (iii)*

With regard to the feature “coherent” vs. “incoherent construction” in *verdienen*-constructions with active and passive non-finite complementation, we can see the following results:

14. With respect to the correlated instances, we have to note that *das* instead of *es* is attested as correlative element in one case.



Table 10. *verdienen* + INF with respect to active/passive of INF and coherence

construction	coherence	
	Coherent	Incoherent
Passive inf. (1a) + (1b)	73	63
Active inf. (1c) + (1d)	23	20

The total number of 179 instead of 413 with regard to infinitive complementation (cf. Table 7, 8 and 9) is due to the fact that the evaluation and classification of an item as to its coherent or incoherent construction cannot be conducted in every case. This is because not every syntactic construction is discriminatory between coherence or incoherence; in other words, there are environments neutralizing this distinction. The relevant constructions qualified for being assigned the values “coherent/incoherent” are the ones showing verbal bracketing known in periphrastic forms (cf. *hat/hatte/hätte verdient* vs. synthetic *verdient/verdiente*) or a specific word order placing the finite verb in final position known in subordinated clauses in German. In other words, instances containing a synthetic form of *verdienen* placed in a main clause instead of a subordinated one cannot be judged with regard to their coherent or incoherent construction. Therefore, 234 instances of non-correlated infinitive-complements cannot be classified regarding coherence due to the lack of criteria clearly supporting the one or the other option. This leaves us with 179 instantiations for the third model, which investigates the impact of coherence (cf. 4.2). As this is an additional criterion, the fact that only a part of our data is distinctive here does not have a negative impact on the interpretation of the other models (see Section 4.2).

With respect to *verdienen*-constructions with *dass*-complementation, our corpus data show the following results concerning the presence or absence of correlative *es* and the animacy of subject:

Table 11. *verdienen* + *dass*-clause with respect to animacy

<i>dass</i> +/- <i>es</i>	animacy of subject	
	Animate	Inanimate
<i>dass</i> -clause – <i>es</i> (2a)	11	6
<i>dass</i> -clause + <i>es</i> (2a)	15	7

There are no occurrences showing a propositional subject. One sentence containing a *wer*-clause in the subject slot has been classified as animate, since clauses introduced by *wer* refer to some person and not propositions, even if they are assigned the category clause and not noun phrase.

Regarding (in)coherence, it can be stated that *dass*-clauses, being finite clauses, are considered as non-coherent in general regardless of occurring with or without a correlative *es*. In these cases, subordinative *dass* introduces an embedded finite object clause clearly marking the presence of two predications.

## 4.2 Statistical models

According to the goals of the present study, we fitted three mixed-effects logistic regression models using the R-package lme4 (Bates et al. 2015). The first model, consisting of a fixed effect (namely animacy of subject referents) and a random effect (only intercept for texts) is shown in (I). The target variable is the presence or the absence of the correlate *es* in the constructions with the verb *verdienen*.

### I. $CORRELATE \sim ANIMACY + (1|TEXT)$

This model was fitted based on the data with the constructions with active and passive infinitives (the observations with *dass*-clauses are not included) and aimed to ascertain if the constructions with or without the correlate *es* correspond with the more grammaticalized contexts, i.e. with inanimate subjects, or with the less grammaticalized contexts, i.e. with animate subjects.

The mixed-effects logistic regression does not show a significant effect of animacy (see Table 12). The p-value for the fixed effect *ANIMACY* is high above the critical level of 0.05 ( $p=0.964$ ). This suggests that the occurrence of the correlate *es* (or its non-occurrence) is not connected with the strength of grammaticalization expressed by animacy and should be regarded more as variation in usage.

Table 12. Fixed effects in the model\*

Fixed effect	Coef	SE	Z	PR	Sign
(Intercept)	10.461	1.424	7.347	0.000	***
<i>ANIMACY_inanimate</i>	0.054	1.189	0.046	0.964	

\* COEF=regression coefficient, SE=standard error, Z=z-statistic, PR=p-value, and SIGN=level of significance.

The second model that we fitted is concerned with the correlation between the *verdienen*-constructions with passive and active infinitives, on the one hand (the observations with *dass*-clauses are not included), and the animacy of subject

referents, on the other hand (see (II)). In doing this, we again utilized the concept of animacy as an indicator of the grammaticalization level.

## II. $CONSTRUCTION \sim ANIMACY + (I|TEXT)$

The mixed-effects logistic regression finds a significant effect for animacy (see Table 13):

Table 13. Fixed effects in the model

Fixed effect	Coef	SE	Z	PR	Sign
(Intercept)	0.818	0.417	1.959	0.050	.
ANIMACY_inanimate	1.102	0.485	2.272	0.023	*

According to the fixed effects estimates, by switching from animate to inanimate contexts, the probability for the constructions with passive infinitives increases. This can be taken as additional support for our assumptions concerning the lower degree of grammaticalization of passive infinitives as compared to active infinitives (cf. 3.3, also Section 1). The passive infinitives represent the stage of grammaticalization called “critical context”: *verdienen* takes inanimate subjects here (as opposed to its usage as a full verb, which is restricted to animate subjects); moreover, this construction even favors subjects with the (new) feature ‘inanimate’. Thus, the new, more grammatical meaning (‘should be V-ed’) can be discriminated from older meanings ‘deserve’. The verb *verdienen* has become truly polysemous depending on particular contexts / constructions. The construction with passive infinitives is highly favorable for this reinterpretation, as it implies that the action is directed towards the patient subject (undergoer, typically inanimate), while the source of the action, the agent, is demoted from a major syntactic role. This corresponds greatly with the results of the statistical model that the construction with passive infinitives tends to strongly attract inanimate subjects.

Active infinitives, on the other hand (still infrequent), show the ultimate shed of any subject restriction, the new meaning (‘should’, ‘ought to’) is no longer dependent on a context that disfavors the old lexical meaning, i.e. the construction *verdienen* & active infinitive is more grammaticalized (cf. the corresponding thoughts on animacy presented in 2.4).

The application of the concept of animacy as a grammaticalization factor provides results that point to complex pathways in grammaticalization, as has been hypothesized in this paper. The details of the distribution of animate vs inanimate subjects in more relevant constructions all the way from the lexical usages to various grammaticalized usages must be postponed for further investigations.

Finally, we fitted the third model that aimed at finding out the association between the *verdienen*-constructions with passive and active infinitives, on the one hand, and the type of coherence of infinitival complements (coherent vs. incoherent), on the other (see (III)). As mentioned above, the constructions with coherent infinitives are regarded as more grammaticalized. For this statistical model, we used only observations that were analyzable in respect to the concept of coherence, which amounts to 178 instantiations (cf. Table 10).

### III. CONSTRUCTION $\sim$ COHERENCE + (I|TEXT)

The resulting mixed-effects logistic regression model does not indicate a significant effect for coherence (see Table 14). The p-value for the fixed effect COHERENCE is highly above the critical level of 0.05 ( $p=0.673$ ). This states that the *verdienen*-constructions with passive and active infinitives do not differ in terms of the position of the infinitive clause concerning the verbal bracket.

Table 14. Fixed effects in the model

Fixed effect	Coef	SE	Z	PR	Sign
(Intercept)	1.655	0.507	3.266	0.001	**
COHERENCE_incoherent	-0.189	0.449	-0.422	0.673	

## 5. Discussion

The empirical data presented in Sections 3 and 4 in connection with the conclusions in Section 2 provide a number of important insights into the interconnections between clause-size constructions in the grammaticalization of *verdienen*. The most conspicuous ones, concerning the role of finite complementation in grammaticalization (i.), the role of correlative *es* (ii.) and the internal distinction of active and passive infinitives (iii.) are discussed below.

### i. The role of finite complementation in grammaticalization

The very small total number of *dass*-complementation (39), as opposed to the infinitive complements (413), strongly suggests that the former does not play an important role in the development of the latter.<sup>15</sup> Since we lack diachronic data,

15. This claim at first glance seems to contradict some important findings in Los (2005). Los argues (2005: 99, 123) that there is some equivalence between the two complement types. Based on this assumption Los claims that the analogy with subjunctive *that*-clauses allows the

we are not able to make statements on the chronology of the two complementizer constructions. However, attested data from other modal resp. evidential predicates, in particular *scheinen*, *drohen* and *versprechen*, as discussed in Diewald & Smirnova (2010), show that finite complementation and non-finite complementation evolve in parallel and independently of each other as soon as the first steps towards semantic abstraction of the erstwhile lexical verb are taken. We assume that this scenario is effective for *verdienen* as well. Definite proof, of course, has to be given by future diachronic studies.

Integrating the theoretical reflections of Section 2, we conclude that *dass*-complements with *verdienen* (constructions 2a and 2b) are an instance of what Lehmann (1988) calls “elaboration”. The object *y* of the underlying transitive scene (‘*x* verdient *y*’) is expanded into a propositional entity and encoded as a finite clause. Though not statistically relevant due to the low number of total hits, the animacy data concerning the subjects of the matrix clause (i.e. the *verdienen*-clause) support this interpretation: The constructions 2a and 2b tend to take animate subjects (cf. Table 11: animate 26, inanimate 13). *Verdienen*-constructions with *dass*-complements are expansions of the original transitive verbal scene with the lexical verb *verdienen*, i.e. an actional predicate with a potentially agentive subject and an object (concrete or propositional) as the undergoer (the inner goal) of this scene.

Thus, we may conclude that *dass*-complementation is not an essential stage in the grammaticalization of *verdienen* as a deontic modality marker. It is not conducive to the development of a complex verbal phrase with a modal auxiliary and a non-finite full verb. Instead, it can be viewed as an instance of language change leading to the diversification and ramification of verbal constructions.

## ii. The role of correlative *es*

Having in mind the theoretical reflections on correlative *es* in Section 2, it came as a true surprise to find no indication of the presence or absence of correlative *es* in the matrix clause having any substantial effect on the grammaticalization of modal *verdienen*-constructions.

Correlative *es* appears in any of the constructions investigated in this study in more or less equal proportions. In *dass*-complement constructions the numbers of correlative elements are relatively equal (22 = 56% with *es*, 17 = 44% without *es*).

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*to*-infinitival type to spread to new verbs. However, the functional equivalence is restricted to the subjunctive (with verbs such as *to order*, cf. 2005:123) and the *to*-infinitive, representing a functional connection that differs from the one under investigation in our paper.

As the statistical model 1 shows (cf. also Table 8), the appearance of the correlative *es* in all non-finite constructions (1a–1d) is independent of the animacy of the subject (which does play a role in grammaticalization, cf. below). This provides a clear answer to question (i) in Section 4.1 “Is the presence/absence of correlative *es* connected to the degree of grammaticalization expressed by animacy of *verdienen*-subjects?” The answer is no.

As to the function of correlative *es* in the grammaticalization of *verdienen*-constructions, we may state that due to the reflections and results presented above, it does not interfere in positive or negative ways with the grammaticalization process leading from a full verb with a propositional object complement to a complex verbal construction with deontic modal meaning. Instead, our assumption is that the syntactic rules and effects of correlate insertion in German are triggered by pragmatic functions, like information management in connection with textual coherence (in other words, they belong to a higher order of language structure), and thus work on each construction irrespective of its grammaticalization status.

It should be noted here in passing that we also found that the data on coherent and incoherent serialization, which we had assigned a role as potential indicators of degrees of grammaticalization due to knowledge on the behavior of auxiliaries in German, did not add up to any relevant distinction between the constructions. We dare to put forward the assumption that this criterion becomes effective only at a very advanced stage of grammaticalization, which *verdienen* has not yet reached (cf. the prevalence of passive infinitives). A future study investigating the active infinitive construction (1c) in terms of coherence or incoherence with a much larger corpus might shed more light on this question.

### iii. The internal distinction of passive and active infinitives

The high number of passive infinitives as opposed to active infinitives (Table 7: 352 passive versus 61 active) confirms the assumptions on grammaticalization in Diewald, Dekalo & Czicza (2021) that passive infinitives are a vital and distinct stage in the grammaticalization process of a new deontic modal construction with *verdienen*. It highlights the new, more grammatical meaning of the verb *verdienen* as distinct of and opposed to its older lexical meaning (cf. 3.3). The distribution of the passive versus active infinitives confirms the assumption that the process of grammaticalization is underway but has not yet reached its completion (Diewald, Dekalo & Czicza 2021).

Generally, in terms of the theory of clause linkage, infinitives may be seen as cases of elaboration as are finite clauses. They also include two propositions, but not two independent predications (see below). However, as there is a much

higher degree of subordination (see Section 2.1), this type of elaboration at the same time and in parallel to the elaboration triggers the grammaticalization of the matrix verb.

Diewald, Dekalo & Czicza (2021) show that this elaboration often starts from an abstract object, e.g. *Anerkennung* (position 2, below) and leads on to a passive infinitive, like *anerkannt zu werden*. The infinitive makes explicit the fact that there are two propositions, without, however, clearly treating them as two independent predications, which is the case in finite subordination.

The passive infinitive is a vital step in achieving a wide scope reading of a transitive verb. It promotes the object of the active verbal scene into subject position and demotes the erstwhile agent subject, without pushing it out of the cognitive verbal scene. It keeps its agent status, though this may be inexplicit (i.e. not expressed as a constituent of the clause). Thus, the passive is an ambiguous structure that triggers the possibility of the new reading and allows its foregrounding as its privileged reading.

Being derived from typical transitive scenes, passives are prone to inanimate subjects. This is reflected in our data. For the grammaticalization scenario this means that the passive paves the way for the loss of subject restrictions of the lexical usage, i.e. restriction to animate subjects, by showing a preference for inanimate subjects: semantic change in the full verb *verdienen* is documented here as a loss of semantic restrictions, and thus a loss of full verb semantics. At the same time, this new meaning is (still) restricted to passive infinitives, which, via the implicit, demoted agent, keep the optional relation to the old lexical meaning. The reading of passive infinitive constructions as deontic modal constructions foregrounds the new meaning of *verdienen*, and thus the new function of the whole verbal construction as a modal marker.

The fact that the active infinitive construction (which with a total of 61 occurrences is almost 10 times less frequent than the passive infinitives with a total of 352) slightly favors animate subjects, points to the fact that complete grammaticalization into an auxiliary verb means the total loss of subject restrictions (cf. host class expansion). Apparently, this is what is presently happening in the relatively small group of active infinitives. Most of the infinitives in the active constructions have stative verbs (like *wohnen* in (1c)), or dynamic verbs denoting a process (like *zu Wort kommen* in (1d)),<sup>16</sup> i.e. the verbal scenes modalized here are very different from the original transitive scene of the full verb *verdienen*. Though active in terms of verbal morphology, the subjects are not agents, but experiencers or themes.

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16. See also other verbs such as *heißen*, *eingehen*, *leben* or *sterben*, cf. Diewald, Dekalo & Czicza (2021).

## 6. Conclusion: A potential grammaticalization path of *verdienen* as a deontic modal marker

In order to conclude this paper, we present a refinement of a potential grammaticalization path of *verdienen* as a deontic marker. It takes into account the findings in the results in Diewald, Dekalo & Czicza (2021), particularly on full verb usages, which were not treated here (cf. (3)–(4) and (28)–(29)), and the reflections and results of this paper on clause linkage, animacy and infinitive constructions.

We assume eight positions, and a chronology that includes ramification of the path:

- Stage 1 and 2 refer to the lexical source construction; stage 2 representing the semantic starting point by providing propositions in abstract nouns as heads of NP.
- Stage 3 and 4 present the ramifications derived from stage 2 with finite complements introduced by *dass* (with and without correlative *es*). As claimed above, these constructions constitute a structural option that does not affect the development of the grammaticalizing constructions.
- Stage 5 and 6 show the passive infinitive complements (with and without correlate) that are taken here to derive directly from stage 2, as the other branch next to the *dass*-clause branch.
- Stage 7 and 8 represent the most grammaticalized constructions with the active infinitive (with and without correlative *es*)
  1. *verdienen* + NP<sub>CONCRETE</sub>  
subject: animate, human  
  
see (3)
  2. *verdienen* + NP<sub>ABSTRACT</sub>  
subject: inanimate and animate  
semantic shift of object: concrete → abstract  
  
see (4)
  3. *verdienen* + *es* + *dass*-clause  
subject: tending to animate (but also inanimate)  
syntactic shift of object: NP → finite *dass*-clause  
  
see (2b)
  4. *verdienen* + *dass*-clause  
subject: tending to animate (but also inanimate)  
  
see (2a)



5. *verdienen* + *es* + INFpassive  
subject: tending to inanimate (but also animate)  
identical grammatical subject of *verdienen* + full verb  
  
see (1b)
6. *verdienen* + INFpassive  
subject: tending to inanimate (but also animate)  
  
see (1a)
7. *verdienen* + *es* + INFactive  
subject: tending to animate (but also inanimate)  
syntactic shift of object: INFpassive → INFactive  
  
see (1d)
8. *verdienen* + INFactive  
subject: tending to animate (but also inanimate)  
  
see (1c)

The visualisation of the grammaticalization path with its ramification as to finite vs. non-finite complementation can thus be given as follows: It features four relevant stages, with stage 3 showing a ramification and stage 4 showing the further development of the grammaticalizing branch (respective *es*-correlates make no difference in grammaticalization stage and are noted as variations/positions):

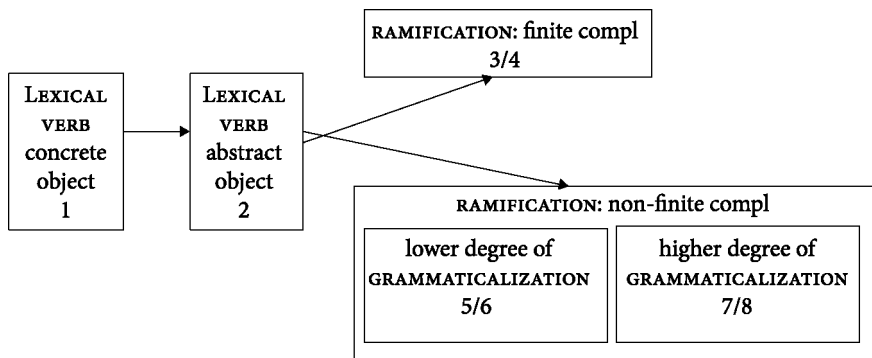


Diagram 2. Grammaticalization path of *verdienen*-constructions

Of course, this is a hypothetical path of grammaticalization. Its verification has to be undertaken by diachronic studies in the future.

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